VERITAS NetBackup™ 4.5

User's Guide

for Novell Netware Target

March 2002
30-000519-011

VERITAS

Disclaimer

The information contained in this publication is subject to change without notice. VERITAS Software Corporation makes no warranty of any kind with regard to this manual, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. VERITAS Software Corporation shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this manual.

Copyright

VERITAS Software Corporation
350 Ellis Street
Mountain View, CA 94043
USA
Phone 650–527–8000
Fax 650-527-8050
www.veritas.com

Contents

Preface

This guide describes how to use NetBackup to back up and restore directories and files that reside either on a NetWare file server configured as a NetBackup client, or on NetWare client PCs connected to that NetWare file server.

Additionally, this guide contains information on configuring and using NetBackup for NetWare.

Audience

This guide is intended primarily for administrators and users on NetWare file servers that are NetBackup clients. It is also useful to system administrators of the NetBackup master server.

Organization

This guide is structured as follows:

Chapter 1, “Introduction,” provides an overview of NetBackup for NetWare.

Chapter 2, “Modifying the Client Configuration,” provides instructions on configuring NetBackup client software and NetBackup server software. It also provides important operating notes for this application.

Chapter 3, “Performing Backups and Restores,” provides step-by-step procedures for using the `bp` interface.

Chapter 4, “Reference,” explains screens, menus, and options available through the interface.

Appendix A, “Additional Target Configuration Examples,” provides an example target configuration of backing up a DOS workstation.

Appendix B, “OTM Parameter Information,” provides information on formatting the `bp.ini` file when using Open Transaction Manager.

Related Documentation

The following documents provide related information. For a more detailed listing of NetBackup documents, refer to *NetBackup Release Notes*.

- *NetBackup Installation Guide for PC Clients*

  Explains how to install NetBackup PC client software. The PC clients are Windows, Mac OS, and Novell NetWare.

If you have a UNIX server, refer to these documents:

- *NetBackup Release Notes*

  Provides important information about NetBackup DataCenter and BusinesServer products on UNIX- and Windows-based servers, such as the platforms and operating systems that are supported and operating notes that may not be in the NetBackup manuals or the online help.

- *NetBackup DataCenter System Administrator's Guide for UNIX*

  Explains how to configure and manage NetBackup DataCenter on a UNIX server.

- *NetBackup BusinesServer System Administrator's Guide for UNIX*

  Explains how to configure and manage NetBackup BusinesServer on a UNIX server.

- *NetBackup Troubleshooting Guide for UNIX*

  Provides troubleshooting information for UNIX-based NetBackup products.

If you have a Windows server, refer to these documents:

- *NetBackup Release Notes*

  Provides important information about NetBackup software, such as the platforms and operating systems that are supported and operating notes that may not be in the manuals or the online help.

- *NetBackup DataCenter System Administrator's Guide for Windows*

  Explains how to configure and manage NetBackup DataCenter on a Windows server.

- *NetBackup BusinesServer System Administrator's Guide for Windows*

  Explains how to configure and manage NetBackup BusinesServer on a Windows server.

- *NetBackup Troubleshooting Guide for Windows*

  Provides troubleshooting information for Windows-based NetBackup products.

Conventions

The following explains typographical and other conventions used in this guide.

Type Style

Typographic Conventions

Typeface	Usage
`Bold fixed width`	Input. For example, type **`cd`** to change directories.
`Fixed width`	Paths, commands, filenames, or output. For example: The default installation directory is `/opt/VRTSxx`.
Italics	Book titles, new terms, or used for emphasis. For example: *Do not* ignore cautions.
Sans serif (italics)	Placeholder text or variables. For example: Replace *filename* with the name of your file.
Serif (no italics)	Graphical user interface (GUI) objects, such as fields, menu choices, etc. For example: Enter your password in the **Password** field.

Notes and Cautions

Note This is a Note. Notes are used to call attention to information that makes using the product easier or helps in avoiding problems.

Caution This is a Caution. Cautions are used to warn about situations that could cause data loss.

Key Combinations

Some keyboard command sequences use two or more keys at the same time. For example, holding down the **Ctrl** key while pressing another key. Keyboard command sequences are indicated by connecting the keys with a plus sign. For example:

Press Ctrl+t

Command Usage

The following conventions are frequently used in the synopsis of command usage.

brackets [ ]

The enclosed command line component is optional.

Vertical bar or pipe (|)

Separates optional arguments from which the user can choose. For example, when a command has the following format:

`command` *arg1*|*arg2*

the user can use either the *arg1* or *arg2* variable.

Terms

The terms listed in the table below are used in the VERITAS NetBackup documentation to increase readability while maintaining technical accuracy.

Term	Definition
Microsoft Windows, Windows	Terms used as nouns to describe a line of operating systems developed by Microsoft, Inc. A term used as an adjective to describe a specific product or noun. Some examples are: Windows 95, Windows 98, Windows NT, Windows 2000, Windows servers, Windows clients, Windows platforms, Windows hosts, and Windows GUI. Where a specific Windows product is identified, then only that particular product is valid with regards to the instance in which it is being used. For more information on the Windows operating systems that NetBackup supports, refer to the VERITAS support web site at `http://www.support.veritas.com`.
Windows servers	A term that defines the Windows server platforms that NetBackup supports; those platforms are: Windows NT and Windows 2000.
Windows clients	A term that defines the Windows client platforms that NetBackup supports; those platforms are: Windows 95, 98, ME, NT, 2000, XP (for 32- and 64-bit versions), and LE.

Getting Help

For updated information about this product, including system requirements, supported platforms, supported peripherals, and a list of current patches available from Technical Support, visit our web site:

```
http://www.support.veritas.com/
```

VERITAS Customer Support has an extensive technical support structure that enables you to contact technical support teams that are trained to answer questions to specific products. You can contact Customer Support by sending an e-mail to support@veritas.com, or by finding a product-specific phone number from the VERITAS support web site. The following steps describe how to locate the proper phone number.

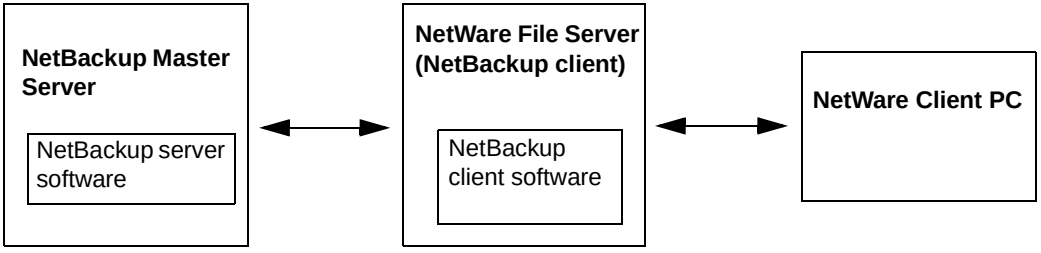
1. Open `http://www.support.veritas.com/` in your web browser.
2. Click **Contact Support**. The *Contacting Support Product List* page appears.
3. Select a product line and then a product from the lists that appear. The page will refresh with a list of technical support phone numbers that are specific to the product you just selected.

Introduction 1

NetBackup allows you to back up and restore directories and files that reside either on a NetWare file server that is configured as a NetBackup client, or on NetWare client PCs connected to that NetWare file server. These operations can either be scheduled or user-directed.

In a NetWare configuration, the NetBackup client must always be a NetWare file server, and all backups and restores of the NetWare client PCs are done through that file server. In this manual, the term NetWare file server refers to a NetBackup client, unless otherwise specified.

NetBackup Server and Client



Scheduled Backups

The NetBackup administrator can set up schedules for automatic full and incremental backups of your client files. The schedules are set up on the NetBackup master server (referred to in this manual as the NetBackup server). When the necessary NetBackup and NetWare file server configuration is complete, these backups occur automatically and unattended, under control of the NetBackup server. Properly scheduled, the automatic backups can meet most of your backup requirements.

In NetBackup terminology, the system that requires the backup is the NetBackup client. The system that manages the storage and retrieval of the backup data is called the NetBackup server.

For more information on automatic backups and other administrator-directed activities, refer to the *NetBackup System Administrator's Guide for UNIX* or the *NetBackup System Administrator's Guide for Windows*.

User-Directed Operations

User-directed backup and restore operations *must* be performed on the NetWare file server, by using the NetBackup client software and running as the NetWare Administrator. There are two types of user-directed operations:

- Back up files and directories that reside on your disks. A backup saves the selected files and directories to a storage device on the NetBackup server.
- Restore previously backed up files and directories to the directory from which they were backed up. You select the files and directories to restore and NetBackup automatically restores them to your disk.

You conduct these activities from the NetWare file server, without logging into the NetBackup server. After a user-directed operation is initiated, it runs under control of the NetBackup server. Simply request the service and the NetBackup server manages the rest, including the storage and retrieval of data.

User Interface

User-directed operations are performed through `bp`, which is a character-based, menu-driven interface that runs on the NetWare file server console.

Progress Logs

For each user-directed backup or restore, you can have NetBackup create a separate progress log file. The NetBackup progress logs allow you to monitor the progress of an operation and detect any problems that may occur. The progress log files can be deleted when they are no longer needed.

Backup Windows

NetBackup allows automatic backup operations to occur only during specific scheduled time periods, referred to as backup windows. For example, if you work daytime hours, your allotted time window may be from 8 am to 6 pm. You are unable to conduct backups at other times. The NetBackup administrator sets the windows when configuring the NetBackup server.

The backup windows do not affect user-directed restores. You can initiate a restore operation at any time.

File Permissions

NetBackup requires the necessary file permissions to access files for backup and restore. For example, write permission is required on the associated directory to restore a file.

NetBackup and Novell Storage Management Services

NetBackup works with Novell's Storage Management Services (SMS) to perform backups of the NetWare server and attached DOS workstations. Storage Management Services (SMS) provides a standard for data, devices, media, and storage management interfaces that in turn produce storage management products that are extensible and compatible.

Modularization and not showing unnecessary information makes SMS products extensible. Thus, changes in one module are unlikely to cause changes in another module. For example, when releasing a new NetWare OS, Novell can release an SMS module that allows existing SMS-compatible products to service the new OS.

SMS is configurable because it is independent from the media, media device, and target's data. For example, to add support for Macintosh targets, a user adds an SMS Macintosh module.

Modifying the Client Configuration 2

Once NetBackup has been installed, you may want to make some adjustments to the NetBackup configuration on the NetWare file server. If so, you can easily do this by changing the `BP.INI` file. This configuration file is used by the NetBackup client software to control back up and restore operations on your computer and is created in the `SYS:\OPENV\NETBACK` directory the first time you run the NetBackup interface program, `bp`.

You can set many `BP.INI` parameters through commands available on the NetBackup Configuration menu (see "NetBackup Configuration Menu" on page 70). Others can be changed only by modifying the file directly with a text editor, such as Notepad.

Note For information on modifying the OTM parameters in the `BP.INI` file, please refer to the appendix "OTM Parameter Information".

BP.INI File Description

The `BP.INI` file is divided into sections and each section is formatted as follows:

```
[section name]
parameter name = value
```

Where:

`[`*section name*`]`	Identifies the start of a new configuration file section.
`parameter name`	Identifies the name of a configuration file parameter.
value	Specifies the value to be set for the associated configuration file parameter.

The following describes each section of the file. An example file follows these descriptions.

[bp] Section

`ClientName`

Specifies the name of the client as specified during installation. This name must match that in the NetBackup master server policy configuration.

`List_Files_Timeout`

Specifies the number of seconds to wait for a response from the NetBackup server when listing files. If this amount of time is exceeded, the user receives the error `socket read failed` even though the server may still be processing the user's request.

The default value is 300 seconds.

`Restore_Retries`

Specifies the number of times to retry a restore after a failure.

The default is 0 (no retries).

`Time_Overlap`

Specifies the number of minutes added to the date range for incremental backups when using date-based backups. This value can be used to compensate for differences in the speed of the clock between the client and server.

The default is 60 minutes.

`Use_Archive_Bit`

Specifies whether incremental backups are done based on the archive bit. Supported values are:

`yes`, which specifies that files are backed up using the archive bit

`no`, which specifies that files are backed up using the datetime stamp.

The default is `yes`.

`Allow_Server_Write`

Specifies whether the system administrator can initiate a restore from the NetBackup server to this client. The supported values are:

`yes`, which allows the system administrator to initiated a restore.

`no`, which prohibits the system administrator from initiating a restore.

The default is `yes`.

`Version`

Specifies the NetBackup release level that was installed on this computer. Do not modify this value.

ALLOW_NON_RESERVED_PORTS

Specifies that NetBackup can use ports 1025 through 5000. This option can be required in order to back up a client that is on the other side of a firewall from the NetBackup server (the firewall must also permit the use of ports 1025 through 5000).

In addition to adding ALLOW_NON_RESERVED_PORTS to the client, execute the following commands as root on the master server:

UNIX server:

```
cd /usr/openv/netbackup/bin/admincmd
./bpclient -client client_name -add -connect_nr_port 1
```

Windows NT server:

```
cd install_path/netbackup/bin/admincmd
bpclient -client client_name -add -connect_nr_port 1
```

Where *client_name* is the name of the client to which you added the ALLOW_NON_RESERVED_PORTS option. On Windows NT, *install_path* is the directory where NetBackup is installed.

BUFFER_SIZE

Specifies the size of the TCP/IP buffers that are used to transfer data between the NetBackup server and client. The size is specified in kilobytes. For example, specify 10 for a buffer size of 10 kilobytes.

The minimum allowable value is 2. If you specify a number less than 2, BUFFER_SIZE will be set to 2.

The default is 32.

ANNOUNCE_DHCP_INTERVAL

This parameter is not used in NetBackup 4.5.

CASE_SENSITIVE_EXCLUDE_LIST

This parameter is not used in NetBackup 4.5.

USE_ARCHIVE_BIT_INCR_WAIT

The value indicates how long (in seconds) the client will wait for acknowledgment from the server that the backup was successful before clearing the archive bits. If the server does not reply within this time period, the archive bits are not cleared.

[tcpip] Section

BPCD

Specifies the port number that the NetBackup client NLM on the Netware file server uses to receive communications from the NetBackup server. Always use the default value unless the system administrator on the master server has told you to change it. You can also define this parameter through the user interface as explained in "NetBackup Configuration Menu" on page 70.

The default is 13782.

BPRD

Specifies the port number used by the NetBackup request daemon, bprd, which executes on the master server. Client requests go to bprd on the master server. Always use the default value unless the system administrator on the master server has told you to change it. You can also define this parameter through the user interface as explained in "NetBackup Configuration Menu" on page 70.

The default is 13720.

[user] Section

backup_class

Specifies the policy name to use for user-directed backups. This parameter is used only on the client. The default is to use the first policy found that contains the client and a user-directed backup schedule.

backup_sched

Specifies the schedule name to use for user-directed backups. This parameter is used only on the client. The default is to use the first user-directed backup schedule in the first policy found that contains the client and a user-directed backup schedule.

[debug] Section

The parameters in this section control the amount of information that NetBackup writes to its BP and BPCD debug logs. NetBackup creates and writes to these logs only if you create BP and BPCD directories under SYS:\OPENV\NETBACK\LOGS.

- BP logs have information about user operations, such as backups and restores.
- BPCD logs have information about the NetBackup client NLM (Netware Loadable Module).

See the *NetBackup System Administrator's Guide for UNIX* or *NetBackup System Administrator's Guide for Windows* for more information on using debug logs.

Note Debug logs can consume a lot of disk space. Delete them when they are no longer needed.

`flush` Controls the level at which the log files are flushed. The higher the flush level the more often the log file is flushed. Supported values are `0`, `1`, or `2`. The default is `0`.

`heap` This parameter is not used in NetBackup 4.5.

`level` Sets the debug level. Supported values are `0`, `1`, or `2`. The higher the level, the more information that is written to the log files. The default is `0`.

Note Setting `level` to `1` or `2` can cause the log files to be very large.

`tcp` This is used for debug purposes and enables `tcp` debugging. Supported values are:

`0` - No extra logging.
`1` - Log basic tcp/ip functions.
`2` - Log all tcp/ip functions including all read and write requests.
`3` - Log contents of each read/write buffer.

Note Setting `tcp` to `2` or `3` can cause the log files to be very large.

[clients] Section

Specifies the names of the clients whose backup images you can browse for files to restore. The NetBackup master server administrator must provide you permission to browse and restore from any client other than the one from which you are running NetBackup. You can also define this list through the user interface as explained in "NetBackup Configuration Menu" on page 70.

[servers] Section

Specifies the hosts that can be a NetBackup server for this client. The master server must be first in the list. You can also define the servers list through the user interface as explained in "NetBackup Configuration Menu" on page 70.

Example BP.INI File

The following is an example of a typical `BP.INI` file:

```
[bp]
ClientName = homer
List_Files_Timeout = 300
Restore_Retries = 0
Time_Overlap = 60
Use_Archive_Bit = yes
Version = 20

[clients]
browser = homer

[servers]
master = whale
server = windows
server = danr

[tcpip]
bpcd = 13782
bprd = 13720

[user]
Backup_Class = pc_alpha
Backup_Sched = user_directed_a

[debug]
flush = 0
level = 0
tcp = 0
```

Define the Targets to Back Up

In order for NetBackup to back up your NetWare file server, you must define the targets to be backed up. A target consists of NetBackup configuration information that defines the collection of information on the NetWare file server that is to be backed up.

For an example of defining targets for a NetWare file server, refer to “Example Target Configuration” on page 18 for examples of configuring targets for a NetWare file server.

▼ To define a target

1. Start the NetBackup interface as explained in “Starting the NetBackup User Interface” on page 29.

2. Type **t** (Target Configuration) at the NetBackup main menu to display the Target Configuration menu.

```
Selected Target:  <ALL>

Target Configuration
--------------------
a) Add New Target...
t) Change Selected Target Service...
s) Selected Target Selection List Configuration...
d) Delete Selected Target...

c) Change Selected Target
l) List/Display Selected Target
i) List/Display Diagnostic Information
o) Output Destination (SCREEN)
h) Help
q) Quit

ENTER CHOICE:
```

3. Execute the desired operation by typing the letter that is to the left of its menu item.

   The menu choices are as follows:

Options		Description
a	(Add New Target)	Define a target, located on the NetWare file server, that is to be backed up.
t	(Change Selected Target Service)	Modify the parameters for the currently selected target.
s	(Selected Target Selection List Configuration)	Add and remove TSA resources, directories, and files from the backup.
d	(Delete Selected Target)	Remove the currently selected target.
c	(Change Selected Target)	Toggle through the list of defined targets.
l	(List / Display Selected Target)	Display the selected target.
i	(List / Display Diagnostic Information)	Display diagnostic information relating to the NetWare file server. This option is provided as a means to allow customer support.

Options	Description
o (Output Destination)	Toggle the output destination between the screen and a file.
h (Help)	Provide help for the information on this menu.
q (Quit)	Return to the main menu.

Adding and Changing Targets

The **a** (Add New Target) and **t** (Change Selected Target Service) menu options allow you to define or modify a target located on the NetWare file server. To define a target, use the following procedure:

1. Type **a** (Add New Target) menu option.

2. Type the name of the target to be defined. The name should be from 1 to 8 characters long.

   This name identifies the collection of information you want to back up on the NetWare file server.

3. Select the Storage Management Data Requestor from the list presented.

   Normally this should be the machine on which you are configuring the target.

   This defines the name of the NetWare file server that will be running the Storage Management Data Requestor NetWare Loadable Module (`SMDR.NLM`) used for backups. Select one SMDR for each target you define.

4. Select a Target Service Agent from the list presented.

   This list presents the specific Target Service Agents (TSA) available on the selected server. The TSA is the module that knows how to back up and restore a particular set of data on the NetWare file server. TSAs include such services as NetWare and DOS workstations.

   For example, on a server referred to as MDANW1, you might have the following choices:

   ```
   Target Service Agents
   ---------------------
   1) MDANW1.NetWare File System
   2) MDANW1.NetWare DOS Workstation TSA
   Enter Choice [1-2]: 1
   ```

   Select `1` to define the NetWare file system for this target's backup set. Select `2` to define the backup of a NetWare client workstation attached to the NetWare file server.

Note DOS workstation TSAs are displayed if `tsados.nlm` (NetWare 3.x and 4.x) or `tsaproxy.nlm` (NetWare 5.x and 6.0) is loaded on the NetWare file server and `tsasms.com` is running on a NetWare client connected to the NetWare file server.

5. Select a Target Service associated with the specific Target Service Agent.

A DOS Workstation backup will list the workstations running the NetWare DOS TSA (`tsasms.com`). A NetWare file server backup will list the names of existing NetWare file servers that can be backed up.

```
Adding Target (<ESC> to abort)
------------------------------

      Target name:  NETWARE

      Storage Management Data Requestors
      ----------------------------------
         1) MDANW1
      Enter Choice [1-1]:  1

      Target Service Agents
      ---------------------
         1) MDANW1.NetWare File System
         2) MDANW1.NetWare DOS Workstation TSA
         3) MDANW1.Novell Directory
      Enter Choice [1-3]:  1

      Target Services
      ---------------
         1) MDANW1
      Enter Choice [1-1]:  1

      Target Service Username: ADMIN
      Target Service Password:

      Available Resources
      -------------------
         1) NetWare server
         2) Bindery
         3) SYS:
      Enter Choice [1-3]:  1

      Add target now? (y/n): y
```


6. Type the user name and password of the account used to validate backup requests.

   Normally, ADMIN or equivalent is required to back up the NetWare file server. The username must be full context, for example, .ADMIN.RSVL.

7. Select a Target Resource from the list presented.

   This list presents the specific resources on the target service to be backed up. The list of resources presented to you is dependent upon the TSA selected for this target.

   - Resources for a NetWare file server include such items as the:
     - Entire NetWare file server. This will back up all volumes and server specific information for that server / client. (Server-specific information, applicable to NetWare 4.x and greater, includes five hidden files created at the time of backup, for disaster recovery purposes.)
     - The Bindery (NetWare 3.x)
     - System (`SYS:`) area
   - Resources for a DOS Workstation include such items as the entire DOS workstation and specific drives on the workstation.

   Select the resource from the list provided.

8. Verify the specified information. If everything is correct, type **`y`** to add the target. Type **`n`** to terminate the process without adding a target.

Target Selection List Configuration Menu

The Target Selection List Configuration menu provides choices for adding and removing TSA resources, directories, and files from the backup. Display this menu by typing **s** (Selected Target Selection List Configuration) at the Target Configuration menu.

```
Target:SYSTEM

Target Selection List Configuration
-----------------------------------
a)  Add Selection List Entry...
d)  Delete Selection List Entry...

l)  List/Display Target
o)  Output Destination (SCREEN)
h)  Help
q)  Quit

ENTER CHOICE:
```

The menu choices are as follows:

Menu Choice	Description
a (Add Selection List Entry)	Add an entry to the backup selection list.
d (Delete Selection List Entry)	Remove an entry from the backup selection list.
l (List / Display Target)	Display the target information.
o (Output Destination)	Toggle the output destination between the screen and a file.
h (Help)	Provide help for information on this menu.
q (Quit)	Return to the main menu.

Adding a Selection List Entry

The Add Selection List Entry menu provides choices for adding and removing TSA resources, directories, and files from the backup. You display this menu by typing **a** (Add Selection List Entry) at the Target Selection List Configuration menu.

When you initially define a target, it includes all major TSA resources, directories, and files. If you specify to exclude an entry, then everything except the excluded entries are included. If you specify to include an entry, then only the entries marked for inclusion are included in the backup.

▼ To add a selection list entry

1. Type **a** (Add Selection List Entry) at the Target Selection List Configuration menu. The Add Selection List Entry menu displays.

```
Add Selection List Entry:
-------------------------
Selection Types:
----------------
1) Exclude major TSA resources
2) Include major TSA resources
3) Exclude directories (full path)
4) Include directories (full path)
5) Exclude files
6) Include files
7) Exclude path/files
8) Include path/files
Enter Choice [1-8]:  5

Name Space Types:
-----------------
1) DOS
2) MACINTOSH
Enter Choice [1-2]:  1

Enter Selection Items: (<ESC> to Abort, Blank Line to End)
Item: *.TMP
```

2. Select an entry from the list of selection types. The following selection types are available (although this list may differ, depending on the TSA selected):

```
1) Exclude major TSA resources
2) Include major TSA resources
```

Options 1 and 2 allow you to exclude or include specific Target Service Agent resources. For example, this allows you to set the Target Resource on the NetWare file server to back up the entire NetWare file server, and then exclude the Bindery resource.

```
3) Exclude directories (full path)
4) Include directories (full path)
```

Options 3 and 4 allow you to exclude or include specific directories on the NetWare file server from the backup. For example, you could exclude SYS:/VISTA/ from the backup.

```
5) Exclude files
6) Include files
```

Options 5 and 6 allow you to exclude or include specific files from the backup. For example, you could exclude all files with the extension .BAK and .TMP by specifying *.TMP and *.BAK.

```
7) Exclude path/files
8) Include path/files
```

Options 7 and 8 allow you to exclude or include specific files under specific directories on the NetWare file server from the backup. For example, you could exclude SYS:/TMP/*.TMP from the backup.

3. Specify the Name Space Type to which the include or exclude list is to apply.

Name spaces include areas such as DOS and Macintosh. Type the number corresponding to the entry in the displayed list of name space types.

NetBackup will use the namespace to name the objects in the backup in the NetBackup database. The actual backup image will contain information pertaining to all the namespaces that exist for the file (i.e. namespaces installed on the volume).

Tip Select a namespace that exists on all the volumes that are included in the target and exists on volumes to which the files might be restored.

For example:

The SYS volume has the DOS namespace and the MAC namespace installed and there is a file X where:

DOS namespace SYS:\THISISA.TXT

MAC namespace SYS::This is a long document name.txt

If the DOS namespace is selected for the target, then in the NetBackup database it would appear as /TGTNAME/SYS/THISISA.TXT. If you choose DOS, you do NOT lose long names.

If the MAC namespace is selected for the target, then in the NetBackup database it would appear as /TGTNAME/SYS/This is a long document name.txt.

When the file is deleted and then restored, the restored file will have:

DOS namespace SYS:\THISISA.TXT

MAC namespace SYS::This is a long document name.txt

This is because when the file is backed up, it contains information about what the file's name should look like in all of the namespaces that existed at the time of the backup.

Redirected restores to different targets are different. If you try to restore the backup to the target defined to use the DOS namespace on the SYS volume on machine B, you would get mixed results. Some files may get restored and some may not. Those original Mac names that are legal DOS names would get restored. But the original Mac names that are NOT legal DOS names would not get restored.

For example:

On machine A in the Mac namespace - `SYS:\FILE.TXT`

This file would get restored correctly using the target defined for machine B because this name is a valid DOS name.

On machine A in the Mac namespace - `SYS:\FILE IS LONG AND NOT DOS VALID.TXT`

This file would NOT get restored correctly using the target defined for machine B because this is not a valid DOS name.

4. Type selection items, one per line, associated with the selection type.

   For example, if `7` (Exclude path/files) is selected for a DOS namespace, you could type `SYS:/STUART/*.BAK` to exclude files with a `.BAK` extension under the `SYS:/STUART` directory. Enter a blank line to end the list.

Deleting Selected Targets

The **d** (Delete Selected Target) menu option in the Target Configuration menu allows you to remove the currently selected target. When entered, the following prompt displays:

```
Delete target NETWARE? (y/n): n
Enter y to delete the target or n to cancel the operation.
```

Example Target Configuration

The following discussion demonstrates an example target configuration, showing the definition of a target that backs up a NetWare file server.

Example Target Configuration: Back Up a NetWare File Server

This example shows how to define a target named MDANET which backs up the NetWare file system on a NetWare file server identified as MDANW1. The target will exclude specific directories in a DOS name space.

1. Type **t** (Target Configuration) at the main menu to display the Target Configuration menu.

```
Selected Target:  <ALL>

Target Configuration
--------------------
a) Add New Target...
t) Change Selected Target Service...
s) Selected Target Selection List Configuration...
d) Delete Selected Target...

c) Change Selected Target
l) List/Display Selected Target
i) List/Display Diagnostic Information
o) Output Destination (SCREEN)
h) Help
q) Quit

ENTER CHOICE:
```

2. Type **a** (Add New Target) at the Target Configuration menu.

   This brings up a series of prompts. Respond to these prompts as explained in the following steps.

   a. Type the name of the target to define. In this example, MDANET:

   ```
   Adding Target (<ESC> to abort)
   ------------------------------
      Target name: MDANET
   ```

   b. Select the name of the Storage Management Data Requestor (SMDR).

   This NetWare configuration has only one server defined, which is MDANW1. Type `1` to select MDANW1:

   ```
   Storage Management Data Requestors
   ----------------------------------
     1) MDANW1
   Enter Choice [1-1]: 1
   ```

   If multiple servers are available, the list shows all the servers configured to run the SMDR.

   c. Select a Target Service Agent (TSA).

MDANW1 is configured to provide two TSAs:

- MDANW1 running the NetWare file system
- MDANW1 with DOS workstations attached running `tsasms.com`

Type `1` to select the NetWare File System:

```
Target Service Agents
---------------------
  1) MDANW1.NetWare File System
  2) MDANW1.NetWare DOS Workstation TSA
Enter Choice [1-2]: 1
```

d. Select the target service to associate with the target.

Since there was only one server on the network, MDANW1, select this server by typing `1`:

```
Target Services
---------------
   1) MDANW1
Enter Choice [1-1]: 1
```

e. Type the user name and password used to provide access for backup.

To back up the NetWare file server, the process requires ADMIN or equivalent privileges. Type the ADMIN ID and password.

```
Target Service Username: .ADMIN.RSVL
Target Service Password:
```

f. Select the name of the resource you are backing up.

This server has three resources defined. Type `1` to select a backup of the entire NetWare file server.

```
Enter resource to backup:
  1) NetWare server
  2) Bindery
  3) SYS:
Enter Choice [1-3] 1
```

g. Confirm the addition of this target.

Review the choices shown on the Adding Target screen.

```
Adding Target (<ESC> to abort)
------------------------------

       Target name:  MDANET

       Storage Management Data Requestors
       ----------------------------------
          1) MDANW1
       Enter Choice [1-1]:  1

       Target Service Agents
       ---------------------
          1) MDANW1.NetWare File System
          2) MDANW1.NetWare DOS Workstation TSA
       Enter Choice [1-2]:  1

       Target Services
       ---------------
          1) MDANW1
       Enter Choice [1-1]:  1

       Target Service Username: ADMIN
       Target Service Password:

       Enter resource to backup:
         1) NetWare server
         2) Bindery
         3) SYS:
       Enter Choice [1-3]:  1

       Add target now? (y/n): y
```

If the information is correct, type **y** to add this target to the system. This returns you to the Target Configuration menu.

3. Type **s** (Selected Target Selection List Configuration) at the Target Configuration menu.

The Target Selection List Configuration menu displays.

```
Target:MDANET

Target Selection List Configuration
-----------------------------------
a)  Add Selection List Entry...
d)  Delete Selection List Entry...

l)  List/Display Target
o)  Output Destination (SCREEN)
h)  Help
q)  Quit

ENTER CHOICE:
```

a. Type **a** (Add Selection List Entry) to display the Add Selection List Entry menu.

```
Add Selection List Entry:
-------------------------
        Selection Types:
        ----------------
           1) Exclude major TSA resources
           2) Include major TSA resources
           3) Exclude directories (full path)
           4) Include directories (full path)
           5) Exclude files
           6) Include files
           7) Exclude path/files
           8) Include path/files
        Enter Choice [1-8]: 3

        Name Space Types:
        -----------------
           1) DOS
           2) MACINTOSH
        Enter Choice [1-2]:  1

        Enter Selection Items: (<ESC> to Abort,
                                Blank  Line to End)
        Item: SYS:/VISTA/
        Item: SYS:/OPENV/
        Item:
```

In this example, we want to exclude the directory paths `SYS:/VISTA` and `SYS:/OPENV`. Type `3` to select Exclude directories (full path).

b. Type `1` under Name Space Types to select DOS.

c. Type the list of selection items as follows, one per line:

```
Item: SYS:/VISTA/
Item: SYS:/OPENV/
Item: (blank line to end the selection)
```


Important Operating Notes

Read the following before performing any operations on the client.

- To perform the backup and restore operations described in this manual, you *must* run the NetBackup Client software as ADMIN or equivalent on the NetWare server console and NetWare client workstation.
- NetBackup can use either of two methods to perform incremental backups:
  - **Archive bit**. With this method, NetBackup includes files in an incremental backup only if their archive bit is set. The system sets the archive bit when the file is changed and clears it again when a full backup is done. User or cumulative-incremental backups do not clear the archive bit. A differential-incremental backup will clear the archive bit.
  - **Date and time**. With this method, NetBackup includes a file in an incremental backup only if the file's modification date indicates that the file has been changed since the last full or incremental backup. Be aware that if you install or copy files from another computer, the new files retain the modification date of the originals. If the original date is before the last backup date on this computer, then the new files will not be backed up until the next full backup.

    The `Use_Archive_Bit` setting in the `BP.INI` file determines the method that NetBackup uses. See "Modifying the Client Configuration" on page 5 for information on configuring this parameter.
- Viewing of files on the Search screen is limited based on the amount of free memory you have on the client before running NetBackup. If this limit is reached, you should modify the date, file path, or directory depth parameters to narrow the scope of the search.
- DOS workstation TSAs are displayed only if `tsados.nlm` (NetWare 3.x and 4.x) or `tsaproxy.nlm` (NetWare 5.x and 6.0) is loaded on the NetWare file server, and if `tsasms.com` is running on a NetWare client connected to the NetWare file server. If you will be backing up DOS workstations through the NetWare file server, make sure these two processes are running on the NetWare client and server before attempting to define a target for backing up a DOS workstation.
- You can back up and restore the NetWare Directory Services (NDS) in the same manner as other files and directories. If it becomes necessary to restore NetWare Directory Services, you should obtain the following Novell Technical Information Document:

  TID2934033 and TID2919565, Restoring NetWare 4.x Backup to 4.x Server

  and follow the instructions in that document.

- NetBackup for NetWare clients skip open files during backups. Open Transaction Manager, shipped with NetBackup DataCenter, will back up open NetWare files. For information on installing OTM, see the *NetBackup Installation Guide for PC Clients*. For information on the OTM parameters, please review the appendix, "OTM Parameter Information".

Note Open Transaction Manager (OTM) is a separately-priced option for BusinesServer. If the client's server is a NetBackup BusinesServer, you must have license keys for this feature registered on the server to enable this feature.

Note NetBackup will back up compressed files in their compressed format. You can subsequently restore the compressed files only to NetWare volumes that support compression. If you know you will need to restore uncompressed files, use the `netware_uncompress` command before you back up files to ensure that they are backed up in an uncompressed format.

Performing Backups and Restores 3

The NetBackup client software provides a character-based, menu-driven interface, called bp, that you can use on the NetWare file server once it has been configured as a NetBackup client.

This chapter provides step-by-step procedures for using bp. If you need information about specific screens or menu options, refer to Chapter 4, “Reference”, or to the online help facility for the interface.

Read This Before Using NetBackup

During configuration, the NetBackup administrator tailors the NetBackup server to meet the requirements of your site. The following are some questions to ask the administrator about your NetBackup server configuration before you use NetBackup. Knowing the answers to these questions can help you avoid problems later.

When do automatic backups occur?

The administrator can schedule full and incremental backups to occur automatically and unattended. These scheduled operations should meet almost all of your backup requirements. By knowing these schedules you can determine situations where you must perform your own backups to preserve critical data.

When are the windows open for user-directed backups?

During configuration, the administrator defines time periods during which your client can perform backup operations. For example, assume the window is open between 8 am and 4 pm. If you attempt a backup at 5 pm, NetBackup prevents the operation and writes a failure message in the progress log for the operations.

What is the retention period for your data?

When data expires, you can no longer recover it. The administrator defines the retention period during configuration of the master server. Ensure that the retention time is long enough to suit your needs.

Starting the NetBackup User Interface

Note Before you can use the NetBackup user interface (bp) to perform a Backup or Restore operation, you must first define a NetWare Target to NetBackup. Refer to "Define the Targets to Back Up" on page 10 for additional information.

1. Start the NetBackup user interface program, bp, by typing the following command on the NetWare file server (assuming that the NetBackup files were placed in SYS:\SYSTEM):

   ```
   load bp
   ```

2. When NetBackup starts, the main menu displays on your screen. The name of your client and NetBackup master server display at the top of the menu.

```
NetBackup Server:  mda42
NetBackup Client:  mdanw1
Main Menu
---------
b) User Directed Backup...
r) Restore Backups...
f) Restore True Image Backups
t) Target Configuration...
n) NetBackup Configuration...
h) Help
q) Quit Utility

ENTER CHOICE:
```


Performing User-Directed Backups

The following procedure explains how to use NetBackup for backing up a specific target.

1. Type **b** (User Directed Backup) at the main menu. This takes you to the User Directed Backup menu.

```
Server: whale
Target: SYSTEM

User Directed Backup
--------------------
b) Initiate Backup...
v) Change Server
t) Change Target
h) Help
q) Quit

ENTER CHOICE:
```

2. Check the NetBackup server and target names at the top of the User Directed Backup menu to ensure that they are correct for the backup you are going to perform. Use the **v** (Change Server) and **t** (Change Target) options to browse through the currently defined NetBackup servers and targets, until the appropriate ones are listed the top of the screen.

3. Type **b** (Initiate Backup) to bring up the Initiate Backup screen.

```
Use progress log? (y/n) (y):
Enter Progress File Path: (SYS:\OPENV\NETBACK\BPBACK.003)
diagnostic output will be logged to SYS:\OPENV\NETBACK\LOGS\BPBACK.003

Initiate backup now? (y/n) (y):

Initiating Backup . . .

The backup was successfully initiated.

Press <Enter> to continue . . .
```

a. Choose whether you want to create a progress log file and write to this file as the backup operation progresses.

- If you want to create a progress log file, type **y** at the `Use progress log?` prompt. Then, choose the path for the log file. Press Enter to accept the default, as displayed in parentheses, or type a new path and press Enter.
- If you do not want process logging, type **n** at the Use progress log? prompt.

b. Review the information you selected and decide whether you want to initiate the backup now.

- Type **y** if you want to send the backup request to the NetBackup server, thus initiating the backup process.
- If you do not want to initiate the backup process, type **n**. This returns you to the User Directed Backup menu and the backup request is not submitted to the NetBackup server.

You can return to the previous menu at any time before initiating the backup by pressing the Escape key.

Once a backup has started, you can return to the User Directed Backup menu by pressing Enter. The backup is completed as a background task. Any important log messages are written to the progress log file.

Restoring Files and Directories

The next three topics in this chapter explain how to restore files that were backed up from your computer.

- Basic Restore Procedure
- Using True Image Recovery
- Restoring Files Backed Up By Another Client

Basic Restore Procedure

The following explains all the basic steps for restoring files or directories. It may be beneficial for you to try a practice run with this procedure before restoring working files or directories to your disk. See “Using True Image Recovery” on page 40 for instructions on performing true image recovery of a directory.

NetBackup restores files according to the original file path name. If existing files have the same names as backed up files, you can choose whether or not to overwrite files (file permissions must also allow overwriting).

1. Type **r** (Restore Backups) at the main menu.

The Restore Backups menu displays.

```
           Path:  /
     Start Date:  10/28/93 00:00:00   Master Server: whale
       End Date:  10/28/93 23:59:59   Browse Client: homer
     Selections:  0                   Browse Target: SYSTEM
Directory Depth:  1 level

Restore Backups
---------------
s) Search...                      p) Change Path...
e) Edit/View Selections...        d) Change Date Range...
r) Initiate Restore...            c) Change Directory Depth...
x) Display Mode: Brief            v) Change Master Server
l) List Backup Images             b) Change Browse Client
a) Specify Destination Target...   t) Change Browse Target

h) Help
q) Quit

ENTER CHOICE:
```

2. Check the following criteria at the top of the Restore Backups menu to ensure that it is appropriate for the restores you are going to perform. Use the corresponding option to change these values.

Path	The directory at which you want to start the search for the desired images. The search begins in the specified directory and goes down the directory tree. At start up, the current path is set to /. To change the path, type **p** (Change Path) and follow the prompts. To search for a specific file, type its complete path at the prompt.
Start Date and End Date	The range of dates must include the backup dates of the files you want to restore. At start up, the Start Date is the most recent full backup date in the NetBackup database. The End Date is 23:59:59 of the current day. To change the range of dates, type **d** (Change Date Range) and follow the prompts (also see "Restore Backups Menu" on page 60). To view the backup dates of the available backup images, type **l** (List Backup Images).
Master Server	This is the NetBackup master server that has the database you will be browsing for targets to restore.
Browse Client	This is the NetBackup client whose backup images you are currently browsing. You must have the necessary permissions from the administrator on the master server to browse clients other than the one where you are running NetBackup.
Browse Target	This is the currently selected target that you will be restoring.

3. Type **s** (Search) at the Restore Backups menu to initiate a search of the NetBackup backup images for files and directories that belong to the target and meet the path and date criteria.

When the search is complete, the Search screen shows the results of the search.

```
Selections: 0  Target: SYSTEM Path: /

   Backup Date
->10/25/93 13:17:11 /SYS/SYSTEM/ACONSOLE.EXE
  10/25/93 13:17:11 /SYS/SYSTEM/ADAPTEC.NLM
  10/25/93 13:17:11 /SYS/SYSTEM/ATOTAL.EXE
  10/25/93 13:17:11 /SYS/SYSTEM/AUTOEXEC.BAK
  10/25/93 13:17:11 /SYS/SYSTEM/BINDFIX.EXE
  10/25/93 13:17:11 /SYS/SYSTEM/BINDREST.EXE
  10/25/93 13:17:11 /SYS/SYSTEM/BROUTER.NLM
  10/25/93 13:17:11 /SYS/SYSTEM/BSETUP.HLP
  10/25/93 13:17:11 /SYS/SYSTEM/BSETUP.NLM
  10/25/93 13:17:11 /SYS/SYSTEM/BSPXCOM.NLM
  10/25/93 13:17:11 /SYS/SYSTEM/BSPXSTUB.NLM
  10/25/93 13:17:11 /SYS/SYSTEM/BSTART.NCF
  10/25/93 13:17:11 /SYS/SYSTEM/BSTOP.NCF
  10/25/93 13:17:11 /SYS/SYSTEM/BTRIEVE.NLM
  10/25/93 13:17:11 /SYS/SYSTEM/BTRIEVE.TRN
Zoom(I)n (Z)oomOut (S)elect (B)ack (F)wd (U)p (D)n (L)eft (R)ight (O)k
```

Note If you are restoring an entire directory and the range of dates includes more than one backup date for files in the directory, NetBackup restores only the most recent backups. To restore earlier versions, you can either:

Restore by file rather than by directory and select the files with the desired backup date.

OR

Return to step 3 and search only the specific backup dates you desire. Here, you can restore the entire directory. However, before proceeding, ensure that you want to overwrite all files in that directory with the earlier version.

4. Use the menu options at the bottom of the Search screen to browse and select the desired files and directories from the backup images (see “Search Screen for Restore” on page 64).

When you are through selecting, type **o** (for Ok) to return to the previous menu.

5. Type **e** (Edit / View Selections) at the Restore Backups menu to bring up the Edit / View Selections screen.

```
Number of Selections = 18
->SYSTEM    /SYS/SYSTEM/ACONSOLE.EXE
  SYSTEM    /SYS/SYSTEM/ADAPTEC.NLM
  SYSTEM    /SYS/SYSTEM/ATOTAL.EXE
  SYSTEM    /SYS/SYSTEM/AUTOEXEC.BAK
  SYSTEM    /SYS/SYSTEM/AUTOEXEC.NCF
  SYSTEM    /SYS/SYSTEM/BCONNLM.HLP
  SYSTEM    /SYS/SYSTEM/BCONSOLE.NLM
  SYSTEM    /SYS/SYSTEM/BINDFIX.EXE
  SYSTEM    /SYS/SYSTEM/BINDREST.EXE
  SYSTEM    /SYS/SYSTEM/BROUTER.NLM
  SYSTEM    /SYS/SYSTEM/BSETUP.HLP
  SYSTEM    /SYS/SYSTEM/BSETUP.NLM
  SYSTEM    /SYS/SYSTEM/BSPXCOM.NLM
  SYSTEM    /SYS/SYSTEM/BSPXSTUB.NLM
  SYSTEM    /SYS/SYSTEM/BSTART.NCF
  SYSTEM    /SYS/SYSTEM/BSTOP.NCF
  SYSTEM    /SYS/SYSTEM/BTRIEVE.NLM
  SYSTEM    /SYS/SYSTEM/BTRIEVE.TRN
(A)dd Selection Un(S)elect (C)lear (B)ack (F)wd (U)p (D)n (L)eft (R)ight (O)k
```

6. Review your selections on the Edit / View Selections screen.

This screen lists your selections and allows you to make changes. When you are satisfied, type **o** (for Ok) to return to the Restore Backups menu.

7. If you want to restore files that were saved under a specific target to a different target (or different target and path) on your NetWare file server, type **a** (Specify Destination Target) to bring up the Specify Destination Target Substitutions screen.

```
Specify Destination Target Substitutions

  Current Restore From Target:  TARGET1
      New Restore From Target:

    Current Restore To Target:  TARGET1
        New Restore To Target:  TARGET2


          Restore From Target:  TARGET1
            Restore To Target:  TARGET2

OK to use these paths? (y/n) (y):y
```

Also see “Redirecting to a Different Target or Path” on page 47.

You are prompted for the following information:

a. In the `New Restore From Target` field, type the name of the target (saved during a previous backup) that you want to restore to a different target. Press Enter.

b. In the `New Restore To Target` field, type the name of the different target where you want to restore the files. Press Enter.

c. Review the information presented to you. If it is correct, type **y** to accept the target specifications.

During the restore, NetBackup restores all files from the `Current Restore From Target` (the target the files were originally backed up from) to the `New Restore To Target` (the different target). In this example, TARGET1 files will be restored to TARGET2.

Note Specifying a different target creates an `altpath.nnn` file in the `SYS:\OPENV\NETBACK\LOGS` directory. You must manually delete these files.

8. Type **r** (Initiate Restore) to bring up the Initiate Restore screen.

```
Restoring the following Files:
SYSTEM:\SYS\SYSTEM\ACONSOLE.EXE
SYSTEM:\SYS\SYSTEM\ADAPTEC.NLM
SYSTEM:\SYS\SYSTEM\BCONSOLE.NLM
SYSTEM:\SYS\SYSTEM\BINDFIX.EXE
SYSTEM:\SYS\SYSTEM\BINDREST.EXE
SYSTEM:\SYS\SYSTEM\BROUTER.NLM
SYSTEM:\SYS\SYSTEM\BSETUP.HLP

Overwrite if file(s) exist? (y/n) (y): y

Use progress log? (y/n) (y): y
Enter Progress File Path: (SYS:\OPENV\NETBACKUP\LOGS\BPREST.001)
diagnostic output will be logged to SYS:\OPENV\NETBACKUP\LOGS\BPREST.001

Use destination path substitution? (y/n) (y): y
Enter Destination Path Control File Path: (SYS:\OPENV\ALTPATH.001)
destination path control file is SYS:\OPENV\NETBACKUP\LOGS\ALTPATH.001

Initiate restore now? (y/n) (y):

Initiating Restore . . .
The restore was successfully initiated.

Press <Enter> to Continue . . .
. .
```

9. Decide whether you want to overwrite existing files:

- To overwrite, type **y**.
- If you do not want to overwrite, type **n**. The restore does not occur if the file exists.

10. Choose whether you want to create a progress log file and write to this file as the operation progresses:

- If you want to create a progress log file, type **y** at the `Use Progress Log?` prompt. Then, choose the path for the log file. Press Enter to accept the default, as displayed in parentheses, or type a new path and press Enter.
- If you do not want logging, type **n**.

11. Choose whether to use any destination target substitution you may have selected in step 7 by typing **y** or **n** at the prompt:

- Type **y** if you want to restore files from the saved target to the different target. If you type **y**, NetBackup asks you to enter where you want the Destination Path Control File created. Press Enter to accept the default as displayed in parentheses, or type a new path and press Enter.
- If you do not want to use the destination path substitution, type **n**.

12. Review the information you selected:

- Type **y** if you want to send the restore request to the NetBackup server, thus initiating the restore process.
- If you do not want to initiate the restore process, type **n**. This returns you to the Restore Backups menu and the restore request is not submitted to the NetBackup server.

You can return to the Restore Backups menu at any time up to initiating the restore by pressing the Escape key.

Once a restore has been initiated, you can return to the Restore Backups menu by pressing Enter. The restore completes as a background task. Any important log messages are written to the selected progress log file.

Restoring Files Backed Up By Another Client

If you have the necessary permissions from the administrator on the NetBackup master server, you can browse the NetBackup database for files backed up by another NetBackup client. Then, if desired, you can restore selected files to your own computer. To do this, perform the following steps prior to performing the restore procedure.

1. Ensure that you have permission to browse and restore files that belong to the other NetBackup client.

2. Type **b** (Change Browse Client) on the Restore Backups menu to change the browse client name (at the top of the screen) to the one whose backups you want to browse or restore. You can also change the browse client from the Client Configuration menu (see "NetBackup Client Configuration Menu" on page 72).

3. Proceed with the restore as explained in "Restoring Files and Directories" on page 32.

Note Unless you specify a different target *and* path, you can restore files only to the same resource from which you backed them up. For example, if you back up files from the `SYS` volume, then you can restore them only to a `SYS` volume. If the client to which you are restoring the files does not have a `SYS` volume, the restore fails.

Using True Image Recovery

True image recovery allows you to restore the contents of a directory to what it was at the time of a selected automatic full or incremental backup. Files deleted prior to that time are not restored. NetBackup does not provide true image recovery based on the time of a user-directed backup or archive. It does, however, use the images from user-directed operations for a true image restore, if they are more recent than the latest automatic full or incremental backup.

To illustrate this concept, consider the example below, which shows the contents of the `SYS:\ABC\DOC` directory during a series of backups performed between 12/01/00 and 12/04/00.

Day Type of Backup	12/01/00 (Full)	12/02/00 (Incr)	12/03/00 (Incr)	12/04/00 (User Back)	12/04/00 (Incr)
	FILE1	FILE1	FILE1	FILE1	FILE1
	FILE2	FILE2	FILE2	FILE2	FILE2
	DIRA/FILEA	DIRA/FILEA	DIRA/FILEA	DIRA/FILEA	-
	DIRB/FILEB	-	-	-	-
	FILE3	-	-	-	-
				DIRC/FILEC	-
				FILE4	FILE4

Assume you are going to restore the 12/04/00 version of the directory.

- If you restore *without* true image recovery, the restored directory will contain all files and directories that ever existed in `SYS:\ABC\DOC\` from 12/01/00 (last full backup) through 12/04/00:

```
SYS:\ABC\DOC\FILE1
SYS:\ABC\DOC\FILE2
SYS:\ABC\DOC\DIRA\FILEA
SYS:\ABC\DOC\DIRB\FILEB
SYS:\ABC\DOC\FILE3
SYS:\ABC\DOC\DIRC\FILEC
SYS:\ABC\DOC\FILE4
```

- If you restore *with* true image recovery, the restored directory will contain only the files and directories that existed at the time of the incremental backup on 12/04/00:

  ```
  SYS:\ABC\DOC\FILE1
  SYS:\ABC\DOC\FILE2
  SYS:\ABC\DOC\FILE4
  ```

  NetBackup does not restore any of the files deleted prior to the 12/04/00 incremental backup.

  The restored files *do not* include `SYS:\ABC\DOC\DIRA` and the 12/04/00 version of `SYS:\ABC\DOC\DIRC`. This is the case because they did not exist at the time of the incremental backup that was used as the reference for the true image restore. The procedure for true image recovery is as follows and is the same as explained under "Restoring Files and Directories" on page 32, except for browsing and selecting files.

For purposes of example, this procedure assumes we are restoring the 12/04/00 version of the `SYS:\HOME\ABC\DOC` directory. The example figure shows the contents of this directory during a series of backups performed between 12/01/00 and 12/04/00.

▼ To perform a true image restore

1. Choose **f** (Restore True Image Backups) from the main menu.

   The Restore True Image Backups menu displays.

```
           Path:  /
     Start Date:  12/01/00 00:00:00   Master Server: whale
       End Date:  12/04/00 23:59:59   Browse Client: turbo
     Selections:  0                   Browse Target: SYSTEM
Directory Depth:  1 level

Restore True Image Backups
--------------------------
s) Search...                      p) Change Path...
e) Delete/View Selections...      d) Change Date Range...
r) Initiate Restore...            c) Change Directory Depth...
x) Display Mode: Brief            v) Change Master Server
l) List Backup Images             b) Change Browse Client
a) Specify Destination Target...   t) Change Browse Target

h) Help
q) Quit



ENTER CHOICE:
```


2. Choose the desired range of dates.

   In our example, we are recovering the most recent version so we can leave the date range at the defaults, which are:

   - Start date is the time of the most recent scheduled full backup of the policy, which in this example is 12/01/00.
   - End date is the current date, which in this example is 12/04/00.

   It is usually best to leave the start date at the default unless you are restoring a version that existed before the last full backup.

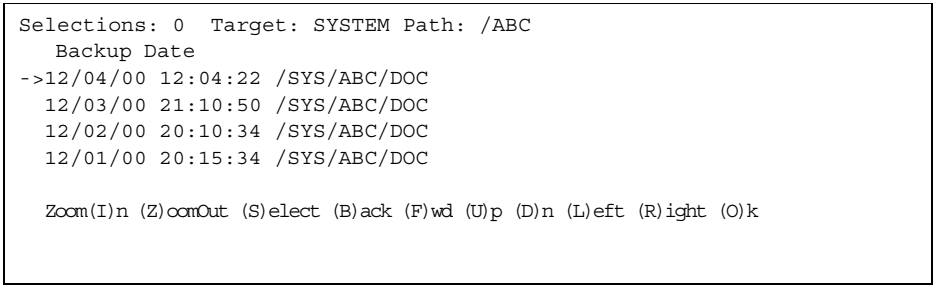
   To change the range of dates, type **d** (Change Date Range) and follow the prompts. To view the backup dates of the available true image recovery backup images, choose the **l** (List Backup Images) option.

3. Choose the directory path at which you want to start the search for the desired images (search begins in this directory and goes down the directory tree).

   In our example, we select /SYS/ABC, which is the parent of the directory we want to restore. To change the path, type **p** (Change Path) and follow the prompts. To search for a specific directory, type its complete path at the prompt.

4. Type **s** (Search) to initiate a search of the NetBackup database for directories that belong to the client and meet the path and date criteria.

   When the search is complete, the Search screen shows the results.



   The individual files are not displayed and cannot be selected because true image recovery is intended only for restoring entire directories. To list or select individual files in a true image recovery image or range of images, you must use the Restore Backups menu instead.

Note If NetBackup cannot find any directories, then check your range of dates, path, and directory depth. If these settings are correct and no directories are found, then check with the administrator on the master server to see if the NetBackup policy that is backing up your files and directories is configured to collect true image recovery information.

5. Use the menu options at the bottom of the Search screen to browse and select the desired directory.

   In our example, we select the 12/04/00 version of the `/SYS/ABC/DOC` directory.

   When you are through selecting, type **o** (for Ok) to return to the previous menu.

6. Type **e** (Delete/View Selections) from the Restore True Image Backups menu to bring up the Delete/View Selections screen.

```
Number of Selections = 1
->SYSTEM   /SYS/ABC/DOC

(A)dd Selection Un(S)elect (C)lear (B)ack (F)wd (U)p (D)n (L)eft (R)ight (O)k
```

7. Review your selections on the Delete/View Selections screen, which lists your selections and allows you to delete but not add.

   When you are satisfied, type **o** (for Ok) to return to the restore menu.

8. If you want to restore to a directory other than the one from which the files were originally backed up, choose **a** (Specify Destination Target) to bring up the Alternate Restore screen and make the required entries.

9. Type **r** (Initiate Restore) to bring up the Initiate Restore screen.

10. Answer the prompts to start the restore.

```
Restoring the following Files:
SYSTEM:\SYS\ABC\DOC

Overwrite if file(s) exist? (y/n) (y): y

Use progress log? (y/n) (y): y
Enter Progress File Path: (SYS:\OPENV\NETBACKUP\LOGS\BPREST.001)
diagnostic output will be logged to SYS:\OPENV\NETBACKUP\LOGS\BPREST.001

Use destination path substitution? (y/n) (y): y
Enter Destination Path Control File Path: (SYS:\OPENV\ALTPATH.001)
destination path control file is SYS:\OPENV\NETBACKUP\LOGS\ALTPATH.001

Initiate restore now? (y/n) (y):

Initiating Restore . . .
The restore was successfully initiated.

Press <Enter> to Continue . . .
. .
```

In our example, the restored directory will contain:

```
FILE1
FILE2
FILE4
```

This is the directory as it appeared at the time of the incremental backup that occurred earlier in the day on 12/04/00.

Also note that if you are overwriting the directory you are restoring, NetBackup does not delete files that are currently in the directory but not in the true image recovery images. In our example, if you had created a file5 after the incremental backup occurred on 12/04/00, but before doing the recovery, then the contents of the directory after the restore would be:

```
FILE1
FILE2
FILE4
```

`FILE5` (this is the file that is not in any of the images)

Checking Progress of Operations with bp

When you initiate a backup or restore operation, you can have NetBackup create a progress log file in a directory of your choice and write to this file during the course of the operation. By default, NetBackup creates a progress log for automatic backups, in your SYS:\OPENV\NETBACK\LOGS\BPCD directory. The naming convention is:

mmddyy.LOG

Where:

mm is the month (01 to 12)

dd is the day (01 to 31)

yy is the last two digits of the year.

For example, the log for an automatic backup for July 15, 1998 is 071598.log.

NetBackup also creates progress logs for user-directed operations, named as follows, in your SYS:\OPENV\NETBACK\LOGS directory:

- BPBACK.*nnn*
- BPREST.*nnn*

Where *n* is a number that is unique for each file. You can read log files by using a file editor.

For user directed backup and restore operations, the progress log files default to BPBACK.nnn and BPREST.nnn. Before a user-directed backup or restore is initiated, you are prompted for the name of the progress log file. You can either accept the default or specify a new name. Each time a user-directed backup or restore is requested, the default name is given the next name in sequence, up to 999 log files. You may wish to either reuse an existing progress log or remember to delete the files after reviewing them so your disk does not become full. Because the progress logs can warn you of problems, it is usually best to read them after performing a backup or restore and before deleting or overwriting them.

The log messages notify you of important events that occurred during the operation. These messages can contain acronyms that specify the error level severity of an event. A complete list of acronyms is as follows:

BPCD	Process specific messages.These apply mainly to backups and restores (for example, when a new request is initiated).
DAT	Informational messages that might be helpful in debugging.
ERR	Error message.
FTL	Fatal error message.
INF	Informational message (no error occurred).

TRV	Trivial error message.
WRN	Warning error message.
TCP	TCP/IP specific messages.

Progress logs also list the media that is required for a backup or restore. For backups, the progress log lists the media IDs as NetBackup requests them during the course of the backup. For restores, the progress log begins by listing all the media that NetBackup needs to recover the backup images containing the files. If an image is split across more than one media ID, a restore log lists all the media but NetBackup uses only what it needs to restore the requested files.

Determine the final results of the backup or restore by checking the status at the end of the log. If NetBackup was unable to back up or restore all the requested files, check the status code that appears a few lines before the end of the log. The *NetBackup Troubleshooting Guide for UNIX* or *NetBackup Troubleshooting Guide for Windows* lists the meaning of these codes.

Redirecting to a Different Target or Path

In some instances, you may want to restore files to a target or path other than the one from which they were backed up. This is called a redirected restore to a different target or path. This topic provides instructions and examples on how to perform these types of restores.

When specifying different targets and paths during a restore, it is important to know how NetBackup uses target configuration files during backups and restores.

- During a backup, NetBackup uses the target configuration to determine how to access a server and which resources to back up. As used here, the term "resource" refers to volumes, directories, and files.
- During a restore, NetBackup uses the information in the target configuration to determine how to access a server but does not use the information about resources. Instead, NetBackup attempts to restore the files to the same named resource from which they were backed up. If this resource does not exist on the target server, the restore fails.

See "Define the Targets to Back Up" on page 10 for instructions on configuring targets.

▼ To redirect files to a different target without specifying a different path

1. Select the **a** (Specify Destination Target) option from the Restore Backups menu or the Restore True Image Backups menu and then follow the prompts.

```
Specify Destination Target Substitutions

  Current Restore From Target:  TGT1
      New Restore From Target:

    Current Restore To Target:  TGT1
        New Restore To Target:  TGT2


          Restore From Target:  TGT1
            Restore To Target:  TGT2

OK to use these paths? (y/n) (y):y
```

2. In the `New Restore From Target` field, type the name of the target saved during a previous backup that you now want to restore to another target. Press Enter.

3. In the `New Restore To Target` field, type the name of the different target to which you want to restore the files. Press Enter.

4. Review your entries and either confirm or cancel:

   - To confirm the paths, type **y**. This returns you to the Restore Backups menu.

     When you initiate the restore, NetBackup restores all files from the `Current Restore From Target` (the original target the files were saved from) to the `New Restore To Target` (the different target).

   - To cancel your selections, type **n**. This returns you to the previous menu and cancels the redirected restore.

▼ To redirect files to a different target and path

To redirect files to a different target and path, follow the same steps as described above, except that you specify a new path in addition to the target. For example, the `Current Restore From Target` and `New Restore To Target` could be:

```
Current Restore From Target: TGT1/DIR1
New Restore To Target: TGT2/DIR2
Namespace specified: X Namespace
```

In this example:

- TGT1/DIR1 is the target and path from which the files were backed up.
- TGT2/DIR2 is the target and path where you want to restore the files.

Note You must always type the target specifiers (TGT1 and TGT2 in the above example), even if the `Current Restore From Target` and `New Restore To Target` are the same.

- Namespace is the type of namespace that the files were backed up from (DOS, Macintosh, and so on). The path where you intend to restore the files must be the same type. NetBackup currently supports the following namespaces:

  DOS

  Macintosh

  NFS

  FTAM

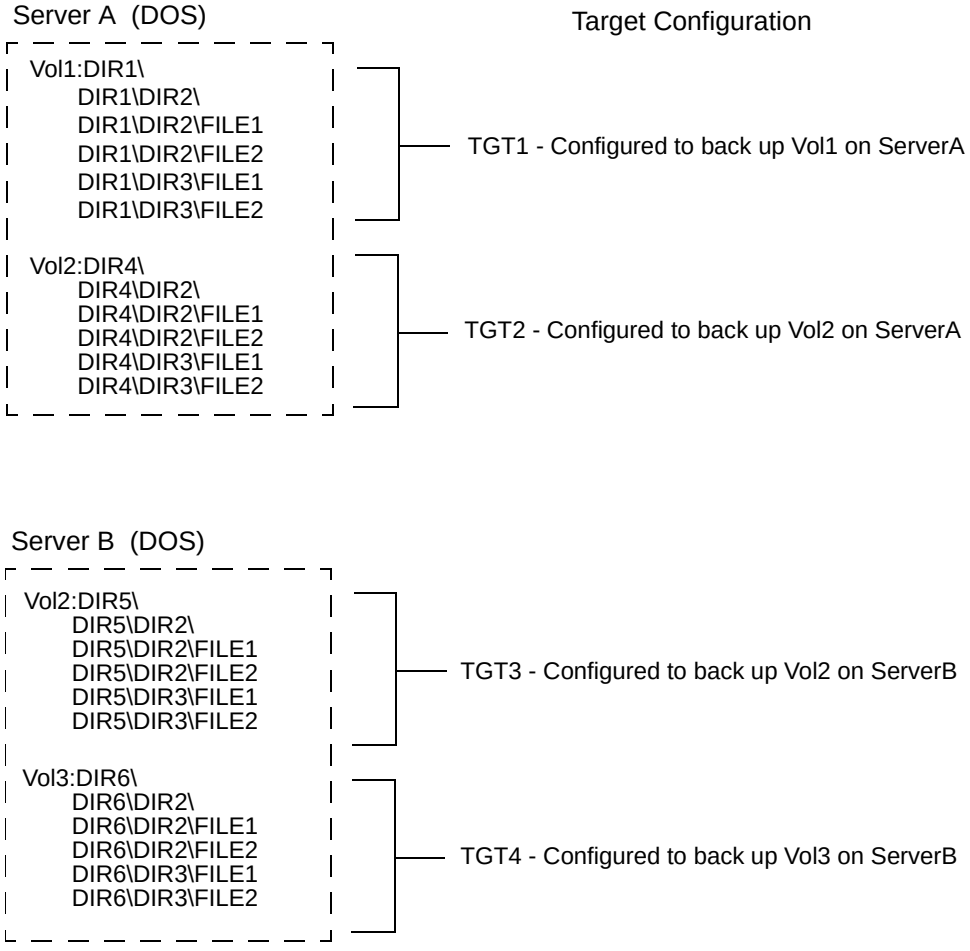
  long (OS/2)

  NetBackup displays only those that are relevant on the destination machine.

Note During the restore process when the new names are being generated, if the new name does not conform to the requirements of the specified namespace, the restore fails. For example, if you specify a DOS namespace and the new name generated does not conform to the 8.3 DOS format, the file cannot be created and an error occurs.

Example Restores

The following examples refer to the configuration in the following figure. Some of these examples show redirected restores to different targets both with and without a different path in order to show cases where you must use a different path in order to achieve the desired results.



Example 1

Assume that the files were backed up from Vol2 on ServerA (TGT2) and we want to restore them to Vol2 on ServerB (TGT3).

To accomplish this, we specify the following on the Specify Destination screen:

`Current Restore From Target: TGT2` (Vol2 on ServerA)
`New Restore To Target: TGT3` (Vol2 on ServerB)

The restore is successful:

- NetBackup uses TGT3 information to access ServerB, and then attempts to restore the files to the same resource from which they were backed up (Vol2).
- NetBackup finds a Vol2 on server B and restores all the files to that volume with the same directory structure found during the backup.

Example 2

Assume that the files were backed up from Vol1 on ServerA (TGT1) and we want to restore them to Vol2 on ServerA (TGT2). This restore requires that a different target and a different path be specified. To illustrate this, we start by showing an unsuccessful attempt that uses a different target without a different path.

Redirected Restore to a Different Target (different path not specified)

First, we try redirecting a restore to a different target without specifying a different path, as follows, on the Specify Destination screen:

`Current Restore From Target: TGT1` (Vol1 on ServerA)
`New Restore To Target: TGT2` (Vol2 on ServerA)

This attempt is unsuccessful. The files are restored to their original target and path because:

- NetBackup uses TGT2 information to access ServerA, and then attempts to restore the files to the same resource from which they were backed up (Vol1).
- NetBackup finds a Vol1 on server A and restores all the files to that volume with the same directory structure found during the backup.
- No files are restored to Vol2 on ServerA.

Redirected Restore to a Different Target and Path

Next we try redirecting a restore to a different target and path.

The first consideration is to determine which targets are on ServerA. Theexample figure shows that both TGT1 and TGT2 are on ServerA. We decide to restore to the same target (TGT1) and specify the following on the Specify Destination screen.

```
Current Restore From Target: TGT1/Vol1
New Restore To Target: TGT1/Vol2
Namespace specified: DOS
```

This attempt is successful:

- NetBackup uses TGT1 information to access ServerA, and then attempts to restore the files to the resource named by the different path (Vol2).
- NetBackup finds a Vol2 on server A and restores all the files to that volume with the same directory structure found during the backup.

  Vol1 on ServerA still contains:

```
Vol1:DIR1\
  DIR1\DIR2\
  DIR1\DIR2\FILE1
  DIR1\DIR2\FILE2
  DIR1\DIR3\FILE1
  DIR1\DIR3\FILE2
```

  Vol2 on ServerA, however, now contains:

```
Vol2:DIR4\
  DIR4\DIR2\
  DIR4\DIR2\FILE1
  DIR4\DIR2\FILE2
  DIR4\DIR3\FILE1
  DIR4\DIR3\FILE2
  DIR1\     (NEW)
  DIR1\DIR2\(NEW)
  DIR1\DIR2\FILE1(NEW)
  DIR1\DIR2\FILE2(NEW)
  DIR1\DIR3\FILE1(NEW)
  DIR1\DIR3\FILE2(NEW)
```

Example 3

Assume that the files were backed up from Vol2 on ServerA (TGT2) and you want to restore them to Vol3 on ServerB (TGT4). This restore requires that a different target and a different path be specified. To illustrate this, we start by showing an unsuccessful attempt that uses an different target without a different path.

Redirected Restore to a Different Target (different path not specified)

First, we try redirecting a restore to a different target without specifying a different path, as follows, on the Specify Destination screen:

`Current Restore From Target: TGT2` (Vol2 on ServerA)
`New Restore To Target: TGT4` (Vol3 on ServerB)

This attempt does not produce the desired results. The files are restored to ServerB, but to Vol2 rather than Vol3:

- NetBackup uses TGT4 information to access ServerB, and then attempts to restore the files to the same resource from which they were backed up (Vol2).
- NetBackup finds a Vol2 on server B and restores all the files to that volume with the same directory structure found during the backup.
- No files are restored to Vol3 on ServerB.

Redirected Restore to a Different Target and Path

Next we try redirecting the restore to a different target and path.

The first consideration is to determine which targets are on ServerB. The example figure shows that both TGT3 and TGT4 are on ServerB. We decide to use TGT4 as the `New Restore To Target` and specify the following on the Specify Destination Restore screen.

```
Current Restore From Target: TGT1/Vol2/DIR4
New Restore To Target: TGT3/Vol3/DIRA/DIRC
Namespace specified: DOS
```

This attempt is successful:

- NetBackup uses TGT4 information to access ServerB, and then attempts to restore the files to the resource named by the different path, `Vol3/DIRA/DIRC`.
- NetBackup finds a Vol3 on server B and restores the DIR4 structure under that volume.

Vol3 on ServerB now contains:

```
Vol3:DIR5\
DIR6\DIR2\
  DIR6\DIR2\FILE1
  DIR6\DIR2\FILE2
  DIR6\DIR3\FILE1
  DIR6\DIR3\FILE2
  DIRA\DIRC\(NEW)
  DIRA\DIRC\DIR2\(NEW)
  DIRA\DIRC\DIR2\FILE1(NEW)
  DIRA\DIRC\DIR2\FILE2(NEW)
  DIRA\DIRC\DIR3\FILE1(NEW)
  DIRA\DIRC\DIR3\FILE2(NEW)
```

Example 4

Assume that the files were backed up from Vol1 on ServerA (TGT1) and we want to restore to them to Vol2 on ServerB (TGT3). This restore requires that a different target and path be specified. To illustrate this, we start by showing an unsuccessful attempt that specifies a different target but not a different path.

Redirected Restore to a Different Target (different path not specified)

First, we try a restore without specifying a different path, as follows, on the Specify Destination screen.

`Current Restore From Target: TGT1` (Vol1 on ServerA)
`New Restore To Target: TGT3` (Vol2 on ServerB)

This attempt is unsuccessful:

- NetBackup uses TGT3 information to access ServerB and then attempts to restore the files to the same resource from which they were backed up (Vol1).
- NetBackup does not find a Vol1 on ServerB.
- No files are restored.

Redirected Restore to a Different Target and Path

Next we try redirecting the restore to a different target and path.

The first consideration is to determine which targets are on ServerB. The example figure shows that both TGT3 and TGT4 are on ServerB. We decide to use TGT3 as the `New Restore To Target` and specify the following on the Specify Destination screen.

```
Current Restore From Target: TGT1/Vol1/DIR1
New Restore To Target: TGT3/Vol2/DIRA/DIRC
```


```
Namespace specified: DOS
```

This attempt is successful:

- NetBackup uses TGT3 information to access ServerB, and then attempts to restore the files to the resource named by the different path, `Vol2/DIRA/DIRC`.
- NetBackup finds a Vol2 on server B and restores the DIR1 structure under that volume.

  Vol2 on ServerB now contains:

```
Vol2:DIR5\
  DIR5\DIR2\
  DIR5\DIR2\FILE1
  DIR5\DIR2\FILE2
  DIR5\DIR3\FILE1
  DIR5\DIR3\FILE2
  DIRA\DIRC\(NEW)
  DIRA\DIRC\DIR2\(NEW)
  DIRA\DIRC\DIR2\FILE1(NEW)
  DIRA\DIRC\DIR2\FILE2(NEW)
  DIRA\DIRC\DIR3\FILE1(NEW)
  DIRA\DIRC\DIR3\FILE2(NEW)
```

- We could have achieved the same results by specifying `TGT4/Vol2/DIRA/DIRC` as the `New Restore To Target`.

Example 5

Assume that the files were backed up from TGT1 (Vol1 on ServerA) and we want to restore them to a different path under Vol1 on Server A (same target). This restore requires that a different target and path be specified.

The first consideration is to determine which targets are on ServerA. The example figure shows that both TGT1 and TGT2 are on ServerA.

We decide to use the same target (TGT1) and specify the following on the Specify Destination screen:

```
Current Restore From Target: TGT1/Vol1/DIR1
New Restore To Target: TGT1/Vol1/DIRA/DIRB
Namespace specified: DOS
```

The restore is successful:

- NetBackup uses TGT1 information to access ServerA, and then attempts to restore the files to the resource named by the different path, `Vol1/DIRA/DIRB`.
- NetBackup finds a Vol1 on server A and restores the DIRA / DIRB structure to that volume.

Vol1 on ServerA now contains:

```
Vol1:DIR1\
  DIR1\DIR2\
  DIR1\DIR2\FILE1
  DIR1\DIR2\FILE2
  DIR1\DIR3\FILE1
  DIR1\DIR3\FILE2
  DIRA\DIRB\(NEW)
  DIRA\DIRB\DIR2\(NEW)
  DIRA\DIRB\DIR2\FILE1(NEW)
  DIRA\DIRB\DIR2\FILE2(NEW)
  DIRA\DIRB\DIR3\FILE1(NEW)
  DIRA\DIRB\DIR3\FILE2(NEW)
```

Example 6

Assume the files were backed up from Vol1 on ServerA (TGT1) and we want to restore them to a different path on Vol3 on ServerB (TGT4). This restore requires that a different target and path be specified.

The first consideration is to determine which targets are on ServerB. The example figure shows that both TGT3 and TGT4 are on ServerB.

We decide to use TGT3 and specify the following on the Specify Destination screen:

```
Current Restore From Target: TGT1/Vol1/DIR1
New Restore To Target: TGT3/Vol3/DIRA/DIRC
Namespace specified: DOS
```

The restore is successful:

- NetBackup uses TGT3 information to access ServerB, and then attempts to restore the files to the resource named by the different path, `Vol3/DIRA/DIRC`
- NetBackup finds a Vol3 on server B and then restores the DIR1 structure under that volume. We could have achieved the same results by specifying `TGT3/Vol3/DIRA/DIRC` as the `New Restore To Target`.

  After the restore is complete, Vol1 on ServerA is unchanged and contains:

```
Vol1:DIR1\
  DIR1\DIR2\
  DIR1\DIR2\FILE1
  DIR1\DIR2\FILE2
  DIR1\DIR3\FILE1
  DIR1\DIR3\FILE2
```


And Vol3 on ServerB, however, now contains:

```
Vol3:DIR6\
  DIR6\DIR2\
  DIR6\DIR2\FILE1
  DIR6\DIR2\FILE2
  DIR6\DIR3\FILE1
  DIR6\DIR3\FILE2
  DIRA\DIRC\(NEW)
  DIRA\DIRC\DIR2\(NEW)
  DIRA\DIRC\DIR2\FILE1(NEW)
  DIRA\DIRC\DIR2\FILE2(NEW)
  DIRA\DIRC\DIR3\FILE1(NEW)
  DIRA\DIRC\DIR3\FILE2(NEW)
```

Reference 4

The NetBackup user interface program, bp, is a character-based, menu-driven interface with all the options necessary to perform backup and restore operations using NetBackup. This chapter explains screens, menus, and options available through the interface. Much of the information in this chapter is also available through the online help facilities for the interface. Refer to Chapter 3, “Performing Backups and Restores”, for instructions on performing specific operations, such as backing up files.

Menu Conventions

Select the desired operation from a menu by typing the letter that is to the left of its menu item.

Main Menu

The main menu is the highest level in the menu tree and allows you to select any of the major user operations. The two lines displayed above the main menu contain the names of the NetBackup server and the NetWare file server that is the NetBackup client.

```
NetBackup Server:  mda42
NetBackup Client:  mdanw1
Main Menu
---------
b) User Directed Backup...
r) Restore Backups...
f) Restore True Image Backups
t) Target Configuration...
n) NetBackup Configuration...

h) Help
q) Quit Utility

ENTER CHOICE:
```

The choices that this menu offers are as follows:

Menu Choice	Description
b (User Directed Backup)	Displays the User Directed Backup menu.
r (Restore Backups)	Displays the Restore Backups menu.
f (Restore True Image Backups)	Displays the Restore True Image Backups menu.
t (Target Configuration)	Creates or modifies Backup Target configurations.
n (NetBackup Configuration)	Sets or changes the NetBackup configuration information.
h (Help)	Provides help information for the main menu. Each secondary menu has its own help option.
q (Quit Utility)	Terminates the NetBackup user interface and returns you to the system prompt.

User Directed Backup Menu

The User Directed Backup menu provides choices for selecting and backing up your NetWare targets. In addition to the menu choices, the currently selected NetBackup master server and target is listed above the menu selections.

```
Server: whale
Target: SYSTEM

User Directed Backup
--------------------
b) Initiate Backup...
v) Change Server
t) Change Target
h) Help
q) Quit

ENTER CHOICE:
```

Execute the desired operation by typing the letter that is to the left of its menu item. The menu choices are as follows:

Menu Choice	Description
b (Initiate Backup)	Brings up the initiate backup screen, from which you can initiate the backup.
v (Change Server)	Allows you to change the NetBackup master server to which you direct the request.
t (Change Target)	Allows you to change the selected target.
h (Help)	Provide help information for this menu.
q (Quit)	Returns you to the main menu.

Restore Backups Menu

The Restore Backups menu provides choices for selecting and restoring backup directories and files.

```
           Path:  /
     Start Date:  10/28/93 00:00:00   Master Server: whale
       End Date:  10/28/93 23:59:59   Browse Client: turbo
     Selections:  0                   Browse Target: SYSTEM
Directory Depth:  1 level

Restore Backups
---------------
s) Search...                      p) Change Path...
e) Edit/View Selections...        d) Change Date Range...
r) Initiate Restore...            c) Change Directory Depth...
x) Display Mode: Brief            v) Change Master Server
l) List Backup Images             b) Change Browse Client
a) Specify Destination Target...   t) Change Browse Target

h) Help
q) Quit

ENTER CHOICE:
```

In addition to the menu choices, information lines at the top of the menu indicate:

Path	Your current directory. This is the starting point for searches that you initiate with the s (search) option. You can change the current directory with the **p** (Change Path) option from the menu. You can use wild card characters *, ?, [, and] to find multiple files and directories. For example:
	`/SYS/VISTA/*.?`
	`/SYS/VISTA/[A-Z]*`
	`/SYS/VISTA/TEST??.*`
	Use forward slashes (/) in these paths. This is required because the request goes to the NetBackup server, which uses UNIX conventions.

Start Date	The Start Date and End Date indicate the range of backup dates to include in a search for files to restore. Start Date indicates the earliest backup date and time that NetBackup checks when searching backup images. You can change the Start Date with the **d** (Change Date Range) option.
End Date	The Start Date and End Date indicate the range of backup dates to include in a search for files to restore. End Date indicates the latest backup date and time that NetBackup checks when searching backup images. You can change the End Date with the **d** (Change Date Range) option.
Selections	Number of files currently selected. This number changes as you select or deselect files with the **s** (Search) or **e** (Edit / View Selection) options.
Directory Depth	How many levels of directories and files NetBackup displays on the Search screen and also how extensive the search is on the server. You can increase or decrease the depth with the **c** (Change Directory Depth) option from the menu. The default is 2.
Master Server	NetBackup master server that has the database for the files you are browsing. You can use the **v** (Change Master Server) option to select another master server.
Browse Client	Client whose files you can browse and restore. Use the **b** (Change Browse Client) option to change this name to that of another client.
Browse Target	Currently selected target. Use the **t** (Change Browse Target) option to change this to another target.

Execute the desired operation by typing the letter that is to the left of its menu item. The menu choices are as follows:

Menu Choice	Description
s (Search)	Takes you to the Search screen from which you can browse the NetBackup database to select the desired files and directories.
e (Edit/View Selections)	Displays the list of files and directories currently selected for restore. You can also add or delete selections from the list.
r (Initiate Restore)	Brings up the Initiate Restore screen, from which you can start the operation.
x (Display Mode)	Selects whether the Search screen shows only names (*Brief* mode) or also includes file details (*Full* mode) as in the following example: **Size Modification Date** 68256 10/22/95 02:01:00 /SYS/AJ510.EMU 9042 05/11/95 01:11:00 /SYS/BAPI.DEV 379 10/22/95 06:46:32 /SYS/VISTA/BP.EXE Toggle the Display Mode indication to Full for file details and to Brief for file names only.
l (List Backup Images)	Displays the list of backup images from the NetBackup database.
a (Specify Destination Target)	Allows you to redirect the restore to a target other than the one from which they were backed up.
p (Change Path)	Allows you to change the directory at which subsequent search operations begin. In the following example, the new file path is /SYS/VISTA/DOCS. Current File Path /SYS/TEST New File Path /SYS/VISTA/DOCS Use forward slashes (/) in these paths. This is required because the request goes to the NetBackup server, which uses UNIX conventions.
d (Change Date Range)	Allows you to change the Start Date and End Date as shown at the top of the menu. These dates indicate the range of dates that NetBackup includes in a search for files to restore.
c (Change Directory Depth)	Allows you to change the number of levels of directories and files that appear on the Search screen. The new number appears on the Directory Depth line at the top of the screen. The default depth is 2.
v (Change Master Server)	Allows you to select the master server with the database for the files you want to restore.

Menu Choice	Description
b (Change Browse Client)	Allows you to browse and restore files backed up by another client, providing the administrator on the master server gives you the necessary permissions.
t (Change Browse Target)	Changes the currently selected target.
h (Help)	Provides help information for this menu.
q (Quit)	Returns you to the main menu.

Restore True Image Backups Menu

The Restore True Image Backups menu is the same as the Restore Backups menu, except that you select and initiate restores of true image backups.

```
           Path:  /
     Start Date:  10/28/93 00:00:00   Master Server: whale
       End Date:  10/28/93 23:59:59   Browse Client: turbo
     Selections:  0                   Browse Target: SYSTEM
Directory Depth:  1 level

Restore True Image Backups
--------------------------
s) Search...                       p) Change Path...
e) Delete/View Selections...       d) Change Date Range...
r) Initiate Restore...             c) Change Directory Depth...
x) Display Mode: Brief             v) Change Master Server
l) List Backup Images              b) Change Browse Client
a) Specify Destination Target...   t) Change Browse Target

h) Help
q) Quit

ENTER CHOICE:
```

Search Screen for Restore

During restores, the Search screen for restore allows you to select files and directories to restore. You display this screen by typing **s** (Search) at the Restore Backups or Restore True Image Backups menu. The list on the Search screen contains directories and files that were in the current directory when the backup occurred, and includes files and directories from user-directed and administrator-scheduled backups.

Note For a true-image restore, the list includes only the directories from scheduled full and incremental backups. Files and the results of user-directed backups or archives do not appear.

The options at the bottom of the screen allow you to move around in the list and to make selections. It usually takes longer to search the NetBackup database than the targets on the Novell server (as is done during a backup).

```
Selections: 0  Target: SYSTEM Path: /
   Backup Date
->10/25/93 13:17:11 /SYS/SYSTEM/ACONSOLE.EXE
  10/25/93 13:17:11 /SYS/SYSTEM/ADAPTEC.NLM
  10/25/93 13:17:11 /SYS/SYSTEM/ATOTAL.EXE
  10/25/93 13:17:11 /SYS/SYSTEM/AUTOEXEC.BAK
  10/25/93 13:17:11 /SYS/SYSTEM/BINDFIX.EXE
  10/25/93 13:17:11 /SYS/SYSTEM/BINDREST.EXE
  10/25/93 13:17:11 /SYS/SYSTEM/BROUTER.NLM
  10/25/93 13:17:11 /SYS/SYSTEM/BSETUP.HLP
  10/25/93 13:17:11 /SYS/SYSTEM/BSETUP.NLM
  10/25/93 13:17:11 /SYS/SYSTEM/BSPXCOM.NLM
  10/25/93 13:17:11 /SYS/SYSTEM/BSPXSTUB.NLM
  10/25/93 13:17:11 /SYS/SYSTEM/BSTART.NCF
  10/25/93 13:17:11 /SYS/SYSTEM/BSTOP.NCF
  10/25/93 13:17:11 /SYS/SYSTEM/BTRIEVE.NLM
  10/25/93 13:17:11 /SYS/SYSTEM/BTRIEVE.TRN
Zoom(I)n (Z)oomOut (S)elect (B)ack (F)wd (U)p (D)n (L)eft (R)ight (O)k
```

Select an option by typing the letter (upper-case or lower-case) in parentheses.

Options	Description
Zoom(I)n	Moves you down one level in the tree to show the files and directories that are in the directory to which the -> symbol currently points.
(Z)oomOut	Moves you up one level in the tree to show the files and directories that are in the parent of the current directory.
(S)elect	Selects the directory or file indicated by the current position of the pointer (->) and adds an asterisk * to the left of the line. Typing **s** again deselects the item.
(B)ack	Displays the previous screen of information.
(F)wd	Displays the next screen of information.
(U)p	Moves the pointer (->) up one item in the list.
(D)own	Moves the pointer (->) down one item in the list.
(L)eft	Shifts the display to the left, if you had previously shifted it to the right in order to display lines that are too wide for the screen.
(R)ight	Shifts the display to the right in order to display lines that are too wide for the screen.
(O)k	Retains your current selections and returns you to the Restore Backups or Restore True Image Backups menu.

Edit/View Selections Screen

The Edit / View Selections screen displays the directories and files that you have selected for restore. You display this screen by typing **e** (Edit / View Selections) at the Restore Backups menu. The top line of the screen shows the number of total selections. This number changes as you select or deselect files.

```
Number of Selections = 18
->SYSTEM   /SYS/SYSTEM/ACONSOLE.EXE
  SYSTEM   /SYS/SYSTEM/ADAPTEC.NLM
  SYSTEM   /SYS/SYSTEM/ATOTAL.EXE
  SYSTEM   /SYS/SYSTEM/AUTOEXEC.BAK
  SYSTEM   /SYS/SYSTEM/AUTOEXEC.NCF
  SYSTEM   /SYS/SYSTEM/BCONNLM.HLP
  SYSTEM   /SYS/SYSTEM/BCONSOLE.NLM
  SYSTEM   /SYS/SYSTEM/BINDFIX.EXE
  SYSTEM   /SYS/SYSTEM/BINDREST.EXE
  SYSTEM   /SYS/SYSTEM/BROUTER.NLM
  SYSTEM   /SYS/SYSTEM/BSETUP.HLP
  SYSTEM   /SYS/SYSTEM/BSETUP.NLM
  SYSTEM   /SYS/SYSTEM/BSPXCOM.NLM
  SYSTEM   /SYS/SYSTEM/BSPXSTUB.NLM
  SYSTEM   /SYS/SYSTEM/BSTART.NCF
  SYSTEM   /SYS/SYSTEM/BSTOP.NCF
  SYSTEM   /SYS/SYSTEM/BTRIEVE.NLM
  SYSTEM   /SYS/SYSTEM/BTRIEVE.TRN
(A)dd Selection Un(S)elect (C)lear (B)ack (F)wd (U)p (D)n (L)eft (R)ight (O)k
```

The menu options at the bottom of the screen allow you to alter your selections. Select an option by typing the letter in parentheses. You can use either upper-case or lower-case letters.

Options	Description

(A)dd Selection	Allows you to add a selection to the list. Choosing this option opens a dialog box in which you type the path name of the file or directory you are adding. Pressing Return adds the new selection to the display. During a restore, NetBackup uses the range of dates indicated by the *current* values of Start Date and End Date when searching for files that you add with this option. This provides some added versatility when searching for backups. For example, if you want to add a file that is outside the date range used for existing selections, you can exit to the Restore Backups menu, change the date range, then return to the Edit / View Selections screen and add the extra file.
	You can also use wild card characters, *, ?, [, and] to specify multiple items. For example:
	`/C/WORK/SRC/*.C`
	or
	`/C/TEST/TEST??.EXE`
	Forward slashes (/) are required in these paths because the request goes to the NetBackup server, which uses UNIX conventions.

Un(S)elect	Deselects the directory or file to which the -> symbol currently points and deletes it from the list.
(C)lear	Clears all previous selections.
(B)ack	Displays the previous screen of information.
(F)wd	Displays the next screen of information.
(U)p	Moves the pointer (->) up one item in the list.
(D)own	Moves the pointer (->) down one item in the list.
(L)eft	Shifts the display to the left, if you had previously shifted it to the right in order to display lines that are too wide for the screen.
(R)ight	Shifts the display to the right in order to display lines that are too wide for the screen.
(O)k	Retains your current selections and returns you to the Restore Backups menu.

Delete/View Selections Screen

The Delete / View Selections screen appears when you choose **e** (Delete / View Selections) from the Restore True Image Backups menu. This screen displays the directories you have selected for the true image restore.

The screen is the same as the "Edit / View Selections Screen" on page 66, except that the (A)dd Selection option is not available.

Specify Destination Target Substitutions Screen

The Specify Destination Target Substitutions screen allows you to specify a different target for restoring files from a previous backup. Display this screen by typing **a** (Specify Destination Target) from the Restore Backups or Restore True Image Backups menu.

```
Specify Destination Target Substitutions

  Current Restore From Target:  TARGET1
      New Restore From Target:

    Current Restore To Target:  TARGET1
        New Restore To Target:  TARGET2


          Restore From Target:  TARGET1
            Restore To Target:  TARGET2

OK to use these paths? (y/n) (y):y
```

1. Specify the restore targets as follows:
   - In the `Current Restore From Target` field, type the name of the target saved during a previous backup that you now want to restore to an another target. Press Enter.
   - In the `New Restore To Target` field, type the name of the target to which you want to redirect the files. Press Enter.
2. Review your entries and either confirm or cancel:
   - To confirm the paths, type **y**. This returns you to the Restore Backups or Restore True Image Backups menu.

     When you initiate the restore, NetBackup restores all files from the `Restore From target` (the original target the files were saved from) to the `Restore To Target` (the target to redirect to).

OR

- To cancel your selections, type **n**. This returns you to the Restore Backups menu and cancels the setting of the redirected restore.

You can also type different path information as explained in “Redirecting to a Different Target or Path” on page 47.

Note Unless you specify a different target *and* path, you can restore files only to the resource from which you backed them up. For example, if you back up files from the SYS volume, then you can restore them only to a SYS volume. If the client to which you are restoring the files does not have a SYS volume, the restore fails.

NetBackup Configuration Menu

The NetBackup Configuration menu provides choices for setting and modifying NetBackup configuration parameters. Display this menu by typing **n** (NetBackup Configuration) at the main menu.

```
NetBackup Configuration
-----------------------------
c) Change NetBackup Client Name...
n) Change Network Parameters...
s) NetBackup Server Configuration...
b) NetBackup Client Configuration...
h) Help
q) Quit

ENTER CHOICE:
```

Execute the desired operation by typing the letter that is to the left of its menu item. The menu choices are as follows:

Menu Choice	Description
c (Change NetBackup Client Name)	Allows you to change your NetWare file server name. You MUST be sure that the value you type here is the same as the name added to the NetBackup server policy configuration by your system administrator.
n (Change Network Parameters)	Allows you to change network parameters. These include the port numbers that NetBackup uses to communicate between the NetBackup client and server.
s (NetBackup Server Configuration)	Allows you to add and delete server names from the defined list of servers, and set the master server name.
b (NetBackup Client Configuration)	Allows you to add and delete names from the defined list of clients.
h (Help)	Provides help for information on this menu.
q (Quit)	Returns you to the main menu.

NetBackup Server Configuration Menu

The NetBackup Server Configuration menu provides choices for adding and deleting names from the defined list of NetBackup servers and setting the NetBackup Master server name. Display this menu by typing **s** (NetBackup Server Configuration) at the NetBackup Configuration menu.

```
NetBackup Servers
-----------------
mdaserv1 (MASTER)
mdaserv2
mdaserv3

Netbackup Server Configuration
------------------------------
a)  Add NetBackup Servers...
d)  Delete NetBackup Servers...
m)  Change Master NetBackup Server...
q)  Quit

ENTER CHOICE:
```

Execute the desired operation by typing the letter that is to the left of its menu item. The menu choices are as follows:

Menu Choice		Description
a	(Add NetBackup Servers)	Allows you to add names to the defined list of NetBackup servers.
d	(Delete NetBackup Servers)	Allows you to delete server names from the defined list of NetBackup servers.
m	(Change Master NetBackup Server)	Allows you to change which NetBackup server is designated as the master server.
q	(Quit)	Returns you to the NetBackup Configuration menu.

NetBackup Client Configuration Menu

The NetBackup Client Configuration menu is used to redirect a restore to a different client and to provide choices for adding and deleting names from the defined list of NetBackup clients and setting the NetBackup browse client name. Display the menu by typing **b** (NetBackup Client Configuration) at the NetBackup Configuration menu.

```
NetBackup Clients
-----------------
homer (browser)
tile

Netbackup Client Configuration
--------------------------
a)  Add NetBackup Clients...
d)  Delete NetBackup Clients...
m)  Change NetBackup Browse Client...
q)  Quit

ENTER CHOICE:
```

Execute the desired operation by typing the letter that is to the left of its menu item. The menu choices are as follows:

Menu Choice		Description
a	(Add NetBackup Clients)	Allows you to add names to the defined list of NetBackup clients.
d	(Delete NetBackup Clients)	Allows you to delete client names from the defined list of NetBackup clients.
m	(Change NetBackup Browse Client)	Allows you to change which NetBackup client is designated as the browser.
q	(Quit)	Returns you to the NetBackup Configuration menu.

Additional Target Configuration Examples A

Example Target Configuration: Back Up a DOS Workstation

This example shows how to define a target named MDAWKS which backs up a DOS workstation (MDAWKS2) connected to the NetWare file server MDANW1. The target will include the entire `D:` drive and the `E:\VISTA\` directory on the DOS workstation.

Note DOS workstation TSAs are displayed if `tsados.nlm` (NetWare 3.x and 4.x) or `tsaproxy.nlm` (NetWare 5.x and 6.0) is loaded on the NetWare file server and `tsasms.com` is running on a NetWare client connected to the NetWare file server. Be sure these two processes are running before attempting to define a target for backing up a DOS workstation.

1. Type **t** (Target Configuration) at the main menu to display the Target Configuration menu.

```
Selected Target:  <ALL>

Target Configuration
--------------------
a) Add New Target...
t) Change Selected Target Service...
s) Selected Target Selection List Configuration...
d) Delete Selected Target...

c) Change Selected Target
l) List/Display Selected Target
i) List/Display Diagnostic Information
o) Output Destination (SCREEN)
h) Help
q) Quit

ENTER CHOICE:
```


2. Type **a** (Add New Target) at the Target Configuration menu.

This brings up a series of prompts. Respond to these prompts as explained in the following steps.

a. Type the name of the target to define; in this example, MDAWKS.

```
Adding Target (<ESC> to abort)
------------------------------
Target name: MDAWKS
```

b. Select the name of the Storage Management Data Requestor (SMDR).

This NetWare configuration has only one server defined, which is MDANW1. Type **1** to select MDANW1:

```
Storage Management Data Requestors
----------------------------------
   1) MDANW1
Enter Choice [1-1]: 1
```

If multiple servers are available, the list shows all the servers configured to run the SMDR.

c. Select a Target Service Agent (TSA). MDANW1 is configured to provide two TSAs:

- MDANW1 running the NetWare File System TSA
- MDANW1 with DOS workstations attached running `tsasms.com`.

Type **2** to select the DOS Workstation TSA:

```
Target Service Agents
---------------------
   1) MDANW1.NetWare File System
   2) MDANW1.NetWare DOS Workstation TSA
Enter Choice [1-2]: 2
```

d. Select the target service to associate with the target.

There are three workstations on the network running the TSA SMS. Type **2** to select the workstation identified as MDAWKS2:

```
Target Services
---------------
   1) MDAWKS1
   2) MDAWKS2
   3) MDAWKS3
Enter Choice [1-3]: 2
```

e. Type the username and password used to provide access for the backup. The backup process requires ADMIN or equivalent privileges.

Type the ADMIN ID and password.

```
Target Service Username: ADMIN
Target Service Password:
```

f. Select the name of the target resource you are backing up. There are three resources defined. Type **1** to select a backup of the entire DOS workstation.

```
Enter resource to backup:
   1) DOS Workstation
   2) C:
   3) D:
   4) E:
Enter Choice [1-4]: 1
```

g. Confirm the addition of this target. Review the choices shown on the Adding Target screen.

```
Adding Target (<ESC> to abort)
------------------------------

       Target name:  MDAWKS

       Storage Management Data Requestors
       ----------------------------------
          1) MDANW1
       Enter Choice [1-1]:  1

       Target Service Agents
       ---------------------
          1) MDANW1.NetWare File System
          2) MDANW1.NetWare DOS Workstation TSA
       Enter Choice [1-2]:  2

       Target Services
       ---------------
          1) MDAWKS1
          2) MDAWKS2
          3) MDAWKS3
       Enter Choice [1-3]:  2

       Target Service Username: ADMIN
       Target Service Password:

       Enter resource to backup:
          1) DOS Workstation
          2) C:
          3) D:
          4) E:
       Enter Choice [1-4]:  1

       Add target now? (y/n): y
```

If the information is correct, type **y** to add this target to the system. The Target Configuration menu redisplays.

3. Type **s** (Selected Target Selection List Configuration) at the Target Configuration menu. The Target Selection List Configuration menu displays.

```
Target:SYSTEM

Target Selection List Configuration
-----------------------------------
a)  Add Selection List Entry...
d)  Delete Selection List Entry...

l)  List/Display Target
o)  Output Destination (SCREEN)
h)  Help
q)  Quit

ENTER CHOICE:
```

4. Type **a** (Add Selection List Entry) to display the Add Selection List Entry menu. In this example, we want to include the entire `D:` drive and the directory `E:/VISTA/`.

```
Add Selection List Entry:
-------------------------
        Selection Types:
        ----------------
           1) Exclude major TSA resources
           2) Include major TSA resources
           3) Exclude directories (full path)
           4) Include directories (full path)
           5) Exclude files
           6) Include files
           7) Exclude path/files
           8) Include path/files
        Enter Choice [1-8]: 4

        Name Space Types:
        -----------------
           1) DOS
           2) MACINTOSH
        Enter Choice [1-2]:  1

        Enter Selection Items: (<ESC> to Abort,
                                Blank  Line to End)
        Item: D:/
        Item: E:/VISTA/
        Item:
```


5. Type **4** (Include directories (full path)) to include full path directories.

6. Type **1** under Name Space Types to select DOS.

7. Type the list of selection items as follows:

```
Item: D:/
Item: E:/VISTA/
Item: (blank line to end the selection)
```

OTM Parameter Information B

Open Transaction Manager Parameters

The Open Transaction Manager (OTM) parameters in the `BP.INI` file are used to define the behavior of OTM. NetBackup uses OTM to back up files, databases, and applications that are open or active.

Open Transaction Manager establishes a point-in-time view, or snapshot, of the data on the drives that contain files to be backed up. NetBackup then backs up the selected files as they existed at the time of the snapshot, regardless of file system activity. The snapshot is maintained by using a cache system to store changes that occur during the backup.

In addition to eliminating problems with busy files, Open Transaction Manager keeps all relationships between files in the backup intact. For example, assume that keywords in files A and B must be synchronized for an application to work. Without OTM, if A is backed up but B is changed before it is backed up, the two files are not synchronized after a restore and the application will not work. With OTM, all files are backed up as they exist at a single point in time so that relationships are maintained and these problems cannot occur.

BP.INI File Description

The `BP.INI` file is divided into sections and each section is formatted as follows:

`[`*section name*`]`
`parameter name =` *value*

Where:

`[`*section name*`]`	Identifies the start of a new configuration file section.
`parameter name`	Identifies the name of a configuration file parameter.
value	Is the value to be set for the associated configuration file parameter.

The following describes the OTM section of the file. An example file follows these descriptions.

[otm] Section

`Cache_File`

Specifies the location of the cache file that contains the copy of data that changes during the backup. For best performance, place the cache file on a drive that is not backed up. By default, the program determines the cache location at run time (for example, SYS:\SYSTEM\OTMCACHE).

`Cache_Control`

Specifies the frequency with which Open Transaction Manager clears its cache during a backup, which can help to reduce the size of the cache file. For example, if this value is set to 50, then after every 50 files that are backed up, Open Transaction Manager clears its cache of data that it has for those files. A lower number results in the cache being cleared more often, but that can decrease performance. The default setting is 0, which means cache clearing does not occur.

When `Current` is set to 0 (meaning that global snapshots are used), the `Cache_Control` setting works as described in the following examples. For these examples, assume that `Current` is set to 0 and that there are two volumes: SYS and USER. Also assume that both volumes are backed up and that Open Transaction Manager places the cache on the SYS volume.

- If `Cache_Control` is set to 0, the cache is never cleared and cannot grow past the `Cache_Size_Init` setting. This means that `Cache_Size_Init` must always be set for the maximum amout of data expected.
- If `Cache_Control` is greater than 0, Open Transaction Manager clears the cache of data for the SYS volume after the backup of the SYS volume is complete. Open Transaction Manager then allows the cache to grow to the `Cache_Size_Max` setting and clears it periodically, according to the `Cache_Control` setting. This allows you to set `Cache_Size_Init` to a lower value because if more space is required, Open Transaction Manager can increase the `Cache_Size_Max` setting.

`Cache Control` is not used if more than one backup runs at a time. The action that occurs in this instance depends on whether the backups execute at the same time. The first backup that executes is able to use `Cache Control` but additional backups executing at the same time are not.

`Cache_Size_Init`

Specifies the initial size of the cache file (in megabytes). If you do not specify a value, NetBackup sets it to 150 megabytes. See “Guidelines for Setting the OTM Cache” on page 82 for more information.

`Cache_Size_Max`

Specifies the maximum cache size (in megabytes) of the cache file. The guideline for maximum cache size is to set it to 10% of all used disk space. For example, if your used disk space is 1 GB, set the maximum cache to 100 MB. A shortcut is to set the

maximum cache size to 0 MB and let NetBackup determine the appropriate value at run time. The default maximum cache size for the client is 592 MB, and for a master or media server is 250 MB.

`Logging`

Specifies the logging level for open transaction management but does not affect other logging. This allows you to obtain more information about an open transaction management problem without affecting the logging level for other parts of the backup. The value can range from 0 to 6, with level 6 providing the most information. The default value is 0.

`Quiescent_Timeout`

Specifies how many seconds to wait for a quiet period to occur. If this time expires, the backup proceeds, but without open transaction management. The default time period is 60 seconds.

`Quiescent_Wait`

Specifies the duration (in seconds) of the quiet period that must occur before NetBackup starts Open Transaction Manager. The quiet period is a period of time during which no writes are being performed on the drives or volumes to be backed up. The default time period is 5 seconds.

`Use`

Enables open transaction management. This must be turned on for open management to occur. Enter yes or 1 to enable OTM, or no or 0 to disable OTM.

`Current`

The `Current` setting determines the type of snapshot that is taken of the target. Two snapshot types are available: individual and global.

Individual Snapshots

Specifies that OTM takes a snapshot of the resoures configured for a target and backs it up before proceeding to the next target. For example, assume that targets FS_SYS and FS_USER are being backed up. FS_SYS is configured to back up the SYS volume and FS_USER is configured to back up both the USER1 and USER2 volumes. During the course of the backup, a snapshot will be taken of the SYS volume, the SYS volume will be backed up, and then the snapshot will be destroyed. Next, a snapshot will be taken of the USER1 and USER2 volumes, they will be backed up, and then the snapshot will be destroyed. To specify this type of snapshot, the `Current` setting should be 1.

Open transaction management is enabled on only one target at a time, depending on which one is being backed up. This mode is useful when it is not necessary to maintain relationships between files on all the volumes.

Global Snapshots

Specifies that OTM takes a snapshot that includes all of the resources configured for all of the targets before backing up any target. During the course of a backup that uses the same targets, a snapshot will be taken of the SYS volume, the USER1 volume, and the USER2 volume. Next, the volumes are backed up, and then the snapshot is destroyed. To specify this type of snapshot, the `Current` setting should be 0.

Open transaction management is enabled on all of the resources configured for all the targets for the entire duration of the backup. This mode is useful when it is necessary to maintain relationships between files on the different volumes.

Guidelines for Setting the OTM Cache

The required settings for `Cache_Size_Init` and `Cache_Size_Max` depend on the system that is being backed up, and on how Open Transaction Manager is configured. The following explains how NetBackup chooses a volume for the cache and how this choice affects the cache requirements.

When open transaction management is enabled and a backup starts, the cache file is created and NetBackup attempts to place it on a volume where open transaction management is not used. If it is used on all volumes, NetBackup places the cache file on a volume that is big enough to contain it.

The requirement for the initial cache size depends on whether the cache is placed on a volume where open transaction management is used:

- If the cache file is on a volume where open transaction management is being used, the size of the cache file does not grow past the initial size. Here, the initial cache size must be large enough to hold the maximum amount of data that is anticipated (10% of the used disk space is the guideline).
- If the cache file is placed on a volume where open transaction management is not used, the size of the cache file can grow to the maximum size. Here, initial cache size can be set to less than the maximum because it will grow.

The snapshot setting determines the drives where NetBackup uses open transaction management and at what point is it enabled:

- Individual snapshot (set `Current` to 1) enables open transaction management on each target as it is backed up. Here, it is possible to place the cache on a volume where open transaction is not used so a smaller initial cache size is possible.
- Global snapshot (set `Current` to 0) enables open transaction management on all targets that are backed up at the start of the backup. Here, the cache can grow from its initial size only if there is a volume that is not being backed up so that cache can be placed on that volume.

Example BP.INI File

The following is an example of a typical `BP.INI` file:

```
[bp]
ClientName = homer
List_Files_Timeout = 300
Restore_Retries = 0
Time_Overlap = 60
Use_Archive_Bit = yes
Version = 20

[clients]
browser = homer

[servers]
master = whale
server = windows
server = danr

[tcpip]
bpcd = 13782
bprd = 13720

[user]
Backup_Class = pc_alpha
Backup_Sched = user_directed_a

[debug]
flush = 0
level = 0
tcp = 0

[otm]
Cache_File = SYS:\SYSTEM\OTMCACHE
Cache_Control = 0
Cache_Size_Init = 10
Cache_Size_Max = 50
Logging = 0
Quiescent_Timeout = 60
Quiescent_Wait = 5
Use = 1
Current = 0
```


Glossary

access control list (ACL)

Security information associated with files on some file systems.

ACS

Automated Cartridge System. ACS can refer to any of the following:

- A type of Media Manager robotic control. This robot type is supported only by NetBackup DataCenter servers.
- The StorageTek (STK) system for robotic control.
- The highest-level component under STK's ACS library software, which refers to a specific standalone robotic library or to multiple libraries connected with a media passthru mechanism.

active job

A job for which NetBackup is currently processing backup or restore data.

activity logs

See "debug logs."

activity monitor

A NetBackup administration utility that displays information about NetBackup jobs and provides limited control over them.

administration client

See "remote administration console."

administrator

A user that is granted special privileges to install, configure, and manage the operation of a system, network, or application

AIT

Sony Advanced Intelligent Tape, a type of tape drive or media type.

alternate-client restore

See “redirected restore (different client).”

alternate-target restore

See “redirected restore (different target).”

alternate path restore

See “redirected restore (different path).”

alternate read server

A server used to read a backup image which was originally written by a different media server. The media server specified as Alternate Read Server must have access to the media containing the backup image or images it is configured to read.

archive

A special kind of backup where NetBackup backs up the selected files, and if the backup is successful, deletes the files from the local disk. In this manual, references to backups also apply to the backup portion of archive operations except where otherwise noted.

archive bit

A file-status bit that the Microsoft based operating system sets when it writes a file, thereby indicating that the file has changed.

attributes for a policy

Configuration parameters that control the behavior of NetBackup during operations involving this policy.

autochanger

See “robotic library.”

autoloader

See “robotic library.”

automatic backup

A scheduled backup by the master server.

back up

The act of copying and saving files and folders to storage media.

backup

Refers to the process of copying and saving files and directories to storage media. For example, *the backup is complete*. This term can also refer to the collection of data that NetBackup saves for a client during a backup or archive. For example, *duplicate the backup*.

Backup is two words when used as a verb. For example, *back up the file*.

backup, archive, and restore interface

The name of the NetBackup Microsoft Windows and Java based user interfaces for clients. On servers, these interfaces can be started through the NetBackup Administration Console.

backup window

The period of time during which backups can begin.

block size

The number of bytes in each block of data written on the media during a backup.

bp

A backup, archive, and restore utility for users on NetBackup UNIX clients. It has a character-based, menu interface that can be run from terminals that do not have X Windows capabilities.

bpadm

An administrator utility that runs on NetBackup UNIX servers. It has a character-based, menu interface that can be run from terminals that do not have X Windows capabilities.

bp.conf file

A NetBackup configuration file on UNIX servers and also on UNIX, Macintosh, and OS/2 clients.

bp.ini file

NetBackup initialization file for Novell NetWare target clients.

bpcd

NetBackup Client service on Windows and the NetBackup Client daemon on UNIX.

bprd

NetBackup Request Manager service on Windows and NetBackup Request daemon on UNIX.

cancel a job

Terminating a job and removing it from the job queue.

carousel

See “robotic library.”

catalogs

Internal NetBackup and Media Manager databases. These catalogs contain information about configuration, media, devices, status, errors, and the files and directories in the stored backup images.

CDF

Context-dependent file, which is a type of directory structure on a Hewlett-Packard system.

changer

See “robotic library.”

class

See “policy.”

client

The system with the files to back up, archive, or restore.

client-user interface

See “user interface.”

cluster

See master and media server cluster.

command lines

Commands that users can execute either from the system prompt or in scripts.

compression

The process of compacting data to enable more efficient transmission and storage.

configuration

The parameters that govern the behavior of an application. This term can also refer to the manner in which a network or system is laid out or connected (for example, a network configuration).

consolidated eject

A process of ejecting media for more than one Vault session at a time. A Consolidated Eject can be performed for one or more logical vaults at one time.

consolidated report

A process of generating reports for more than one Vault session at a time. A Consolidated Report can be performed for one or more logical vaults at one time. Consolidated reports are organized by report title, not by vault.

cpio

A UNIX command that can be used for copying files to or from a cpio archive on disk or tape.

ctime

The time that a UNIX inode was changed.

cumulative-incremental backup

A backup that is scheduled by the administrator on the master server and backs up files that have changed since the last successful full backup. All files are backed up if no prior backup has been done. Also see “differential-incremental backup.”

daemon

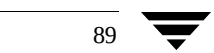
A program on a UNIX system that runs in the background and performs some task (for example, starting other programs when they are needed). Daemons are generally referred to as services or processes on Windows server systems.

database-agent clients

Clients with additional NetBackup software that is designed to back up relational databases.

database-extension clients

See “database-agent clients.”



debug logs

Logs that can be optionally enabled for specific NetBackup and Media Manager programs and processes and then used to investigate problems.

destination storage unit

A storage unit to which Vault sends the data from a duplication operation. If the duplicated backup images are to be vaulted, then the destination storage unit must correspond to the robotic volume group.

device delays

Delays caused by the device that are beyond the control of the storage application. An example is the time required to position tape under the read and write heads.

device host

A host (that has Media Manager installed) where a drive or robotic control is attached or is defined.

device monitor

A Media Manager administration utility that provides monitoring and manual control of Media Manager storage devices. For example, an administrator or computer room operator can use this utility to manually reset devices or set them to the UP or DOWN state.

DHCP

Dynamic host configuration protocol. This TCP/IP protocol automatically assigns temporary IP addresses to hosts when they connect to the network.

differential-incremental backup

Scheduled by the administrator on the master server and backs up files that have changed since the last successful incremental or full backup. All files are backed up if no prior backup has been done. Also see "cumulative-incremental backup."

directory depth

The number of levels below the current directory level that the NetBackup interfaces show in their directory and file list displays.

directory tree

The hierarchical structure in which files are organized on a disk. Each directory lists the files and directories that are directly below it in the tree. On UNIX, the topmost directory is called the root directory.

disaster recovery

Recovering data from backups after a disk crash or other catastrophe.

disk

Magnetic or optical disk storage media.

disk-image backup

A bit-by-bit rather than a file system backup of a disk drive on a Windows platform.

DLT

Digital-linear tape or tape drive type.

Domain Name Service (DNS)

A program that handles name translation for network communications.

drive cleaning

The use of a special cleaning tape to clean the heads on a drive.

duplicate image

A copy of a backup image.

eject

Move media out of a robotic library.

encryption

Provides additional security by encrypting backup data on the client. This capability is available only with the NetBackup Encryption option.

entry and exit ports

See “media access port.”

exclude list

A list that designates files or directories to exclude from automatic backups.

expiration (image)

The date and time when NetBackup stops tracking a backup image.

expiration (volume)

The date and time when the physical media (tape) is considered to be no longer usable.

external media ID

This is an identifier written on a media cartridge or canister to help the operator identify the volume before inserting it into a drive or robot. For labeled media, the external media ID should be the same as the media ID recorded on the media.

EVSN

See “external media ID.”

FlashBackup

A special type of raw-partition backup that requires the NetBackup FlashBackup separately-priced option (this option is available only for NetBackup DataCenter).

flush level

Controls how often Netbackup clears its log files on a Novell NetWare or Microsoft Windows client platform.

fragment

A part of a backup or archive image. NetBackup can be configured to divide images into fragments when they exceed a certain size or span tapes.

frequency (backup)

How often NetBackup performs scheduled backups. For example, if the frequency is seven days then backups occur once a week.

FROZEN media state

If a volume is FROZEN, NetBackup keeps it indefinitely and can restore from it but not use it for further backups or archives.

full backup

A backup that copies, to a storage unit, all files and directories that are beneath a specified directory.

FULL media state

If this appears in a report or listing, it indicates the volume is FULL and cannot hold more data or be used for further backups.

global attributes

NetBackup configuration attributes that affect all policies.

GDM Dashboard

The name for the Global Data Manager interface. The Dashboard enables monitoring job and drive activity on multiple master servers, as well as providing alerts to problem conditions.

GDM Managed Server

A NetBackup master server that appears as a managed master server in the left pane of the GDM Dashboard.

GDM Server

A NetBackup master server that has the Global Data Manager license activated. When logging into this host, the user can monitor the activity on multiple master servers using the GDM Dashboard interface. If the host has installed the Advanced Reporter option, the reports show information on multiple master servers.

Global Data Manager (GDM)

A separately-priced option (for UNIX servers) that provides an interface with a tree view where the administrator can view and administer multiple master servers. The server where the option is installed is called a GDM Server.

Global Device Database

A single host that serves as the repository for global device configuration information. When you install NetBackup, by default the master server is configured as the global device database host.

GNU tar

A public domain version of the UNIX tar program.

goodies directory

A directory containing programs, scripts, and other files that are not formally supported.

GUI

Graphical user interface.

hard link

On UNIX, a hard link is a pointer to the inode for the data. On a Windows server, a hard link is a directory entry for a file. Every file can be considered to have at least one hard link. On NTFS volumes each file can have multiple hard links, and a single file can appear in many directories (or even in the same directory with different names).

heap level

A parameter for memory-heap debugging on a Novell NetWare or Windows NetBackup client.

hierarchical storage management

The process of automatically migrating selected files from a managed file system to specified migration levels on secondary storage, while maintaining transparent access to those files.

host

A computer that executes application programs.

host name

Name by which a host computer is identified by programs and other computers in the network.

HSM

See storage migrator.

image

The collection of data that NetBackup saves for an individual client during each backup or archive. The image contains all the files, directories, and catalog information associated with the backup or archive.

import

The process of recreating NetBackup records of images so the images can be restored.

include list

A list that designates files or directories to add back in from the exclude list.

incremental backup

See “cumulative-incremental backup” and “differential-incremental backup.”

inject

Move media into a robotic library.

inport

See “media access port.”

inode

A UNIX data structure that defines the existence of a single file.

install_path

Directory where NetBackup and Media Manager software is installed. The default on Windows servers is `C:\Program Files\VERITAS` and on UNIX it is `/usr/openv`.

jbpSA

The Java-based NetBackup interface for performing user backups, archives, and restores.

jnbSA

The Java-based NetBackup interface for administrators.

job

A parcel of work submitted to a computer. NetBackup jobs are backups, archives, or restores.

kernel

The nucleus of an operating system.

keyword phrase

A textual description of a backup.

kill a job

See “cancel a job.”

label

Identifier of a tape or optical disk volume. A recorded label includes a media ID.

A barcode label allows a barcode scanner to be used for media tracking.

library

See “robotic library.”

link

See “hard link” or “symbolic link.”

LMF - Library Management Facility

A Media Manager designation for a category of robot. For the specific vendor types and models in this category, see the VERITAS support web site.

This robot type is supported only by NetBackup DataCenter servers.

load

(noun) Amount of work that is being performed by a system or the level of traffic on a network. For example, network load affects performance.

(verb) Copy data to internal memory. For example, load the installation program.

(verb) Used to indicate tape drive initialization done when new media is being added.

logs

Files where a computer or application records information about its activities.

mailslot

See “media access port.”

man pages

Online documentation provided with UNIX computer systems and applications.

Master and media server cluster

A NetBackup master server and the remote media servers that it is using for additional storage. It is possible to configure clusters only with NetBackup DataCenter servers. NetBackup BusinesServer supports only a single server, the master.

Master of Masters

A NetBackup host where Global Data Manager software is installed. When logging into this host, the interface has a tree view where the administrator can view and administer multiple master servers.

master server

The NetBackup server that provides administration and control for backups and restores for all clients and servers in a master and media server cluster. NetBackup BusinesServer supports only a single server and it is the master.

media

Physical magnetic tapes, optical disks, or magnetic disks where data are stored.

media access port

A slot or other opening in a robot where you can insert or remove a tape without having to access the interior of the robot. After inserting a tape, you move it to a slot by using an inject command. Prior to removing a tape, you move it to the port by using an eject command. The inject and eject commands are supported through the add and move screens in the Media Manager administration interface.

media host

NetBackup server to which the job (client) is sending the data.

media ID

An identifier that is written on a volume as part of the recorded label.

Media Manager

Software that is part of NetBackup and manages the storage devices and removable media.

Media Manager Host

Host where Media Manager is installed (may have devices attached)

media server

A NetBackup server that provides storage within a master and media server cluster. The master can also be a media server. A media server that is not the master is called a remote media server. NetBackup BusinesServer does not support remote media servers.

menu interface

A character-based interface for use on terminals that do not have graphical capabilities.

mount

Make a volume available for reading or writing.

mount point

The point where a file system on a disk logically connects to a system's directory structure so the file system is available to users and applications.

MPX

See “multiplexing.”

mtime

The point in time when a UNIX or NTFS file is modified.

multiplexing

The process of sending concurrent-multiple backups from one or more clients to a single storage device and interleaving those images onto the media.

multiplexed group

A set of backups that were multiplexed together in a single multiplexing session.

NDMP

Network data management protocol. NetBackup requires the NetBackup for NDMP separately-priced option to support NDMP.

NetBackup Client service

NetBackup Windows service that runs on clients and servers and listens for connections from NetBackup servers and clients in the network. When a connection is made, this service starts the necessary programs.

NetBackup configuration options

On UNIX servers and on UNIX and Macintosh, clients, these settings are made in the `bp.conf` file. On NetWare target and OS/2 clients, they are in the `bp.ini` file. On Windows servers and Windows clients, these settings are called properties and are made through the Backup, Archive, and Restore interface or the Host Properties dialog in the NetBackup Administration Console.

NetBackup databases

See catalogs.

NetBackup Database Manager service

NetBackup Windows service that runs on the master server and manages the NetBackup internal databases (called catalogs). This service must be running on the master server during all NetBackup administrative operations.

NetBackup Device Manager service

The NetBackup Windows service that runs on a NetBackup server and starts the robotic control processes and controls the reservation and assignment of volumes. This service runs only if the server has devices under Media Manager control. The process is `ltid`.

NetBackup properties

Same as NetBackup configuration options but are called NetBackup properties on Microsoft Windows platforms.

NetBackup Request Manager service

The NetBackup Windows service that runs on the master server and starts the scheduler and receives requests from clients.

NetBackup Volume Manager service

A NetBackup Windows service that runs on a NetBackup server, allows remote administration of Media Manager, and manages volume information. The process is `vmd`.

NIS

Network information service.

NLM

NetWare loadable module.

NFS

Network file system.

nonrobotic

See “standalone.”

ODL

Optical disk library. This robot type is supported only by NetBackup DataCenter servers.

offsite volume group

A volume group in which media will appear after having been ejected from the robot for vaulting. When Vault ejects media it is moved from the robotic volume group to the off-site volume group.

offsite volume pool

A volume pool that contains media that is to be ejected and vaulted. Backup images written to an off-site volume pool by an original NetBackup backup policy or by Vault's duplication feature will be ejected and vaulted. More than one off-site volume pool can be specified for the Eject step of a Vault profile.

original backup

A backup image created by a backup job. A single backup image or all backup images created by an Inline Tape Copy (multiple copy) configuration are considered original backups. A backup image created by a duplication job is not an original backup.

outport

See "media access port."

partitions

The logical partitions into which a magnetic disk is divided.

patch

A program that corrects a problem or adds a feature to an existing release of software.

path length

Number of characters in a pathname.

pathname

The list of directories in the path to a destination directory or file.

PC clients

NetBackup clients that have Microsoft Windows, Macintosh, or IBM OS/2 operating systems.

peername

The name by which a computer identifies itself when establishing connections to other systems.

policy

Defines the backup characteristics for a group of one or more clients that have similar backup requirements.

port

A location used for transferring data in or out of a computer.

Also see “media access port.”

primary copy

The copy of an image that NetBackup uses to satisfy restores. When NetBackup duplicates an image, the original is designated as the primary copy.

privileges

The tasks or functions that a user, system, or application is authorized to perform.

profile

A vault profile is a way to save configuration settings. Specific parameters for duplication, catalog backup, eject, and report or any combination of these steps, are configured within a profile.

progress report

Log where NetBackup records events that occur during user operations.

proxy restore

A proxy restore allows the user to restore files that he has write access to, on a machine other than his desktop. The files must be in a backup of the machine to which they are being restored.

QIC

Quarter-inch-cartridge tape.

queued job

A job that has been added to the list of jobs to be performed.

raw-partition backup

Bit-by-bit backup of a partition of a disk drive on UNIX. On Windows, this is called a disk-image backup.

rbak

The program that Apollo clients use to read data from tape during a restore.

recorded media ID

This is an identifier written as part of the label on a volume and used by Media Manager to ensure that the correct volume is mounted. The recorded media ID should match the external media ID.

redirected restore (different client)

Restoring files to your client when they were originally backed up from a different client. The administrator using the interface on the master server can direct a restore to any client (this variation is called a server directed restore).

redirected restore (different target)

On a Novell NetWare server platform running the NetBackup target version of client software, this operation restores files to a different target than the one from which they were backed up.

redirected restore (different path)

Restores files to a different directory than the one from which they were backed up.

registry

A Microsoft Windows database that has configuration information about hardware and user accounts.

remote administration console

A Windows NetBackup client that has the administration interface software installed and can be used to administer NetBackup servers.

remote media server

A media server that is not the master. Note that only NetBackup DataCenter supports remote media servers. NetBackup BusinesServer supports only a single server, the master.

residence

In Media Manager, information about the location of each volume is stored in a volume database. This residence entry contains information, such as robot number, robot host, robot type, and media type.

resource

A Novell NetWare term that refers to a data set on the target. For example, in DOS, resources are drives, directories, and files. Also see “target service.”

restore

(verb) The act of restoring selected files and directories from a previous backup or archive and returning them to their original directory locations (or to a different directory).

(noun) The process of restoring selected files and directories from a previous backup and returning them to their original directory locations (or to a different directory).

retention level

An index number that corresponds to a user-defined retention period. There are 10 levels from which to choose (0 though 9) and the retention period associated with each is configurable. Also see “retention period.”

retention period

The length of time that NetBackup keeps backup and archive images. The retention period is specified on the schedule.

robotic arm

The component of a robotic library that physically selects the media (tape or optical disk).

robotic library

Refers to a robot and its accompanying software. A robotic library includes a collection of tapes or optical platters used for data storage and retrieval. For example, a Tape Library DLT (TLD) refers to a robot that has TLD robotic control.

robotic volume group

A volume group from which media will be ejected and vaulted. When Vault duplicates backups, they are duplicated to media in the robotic volume group.

root

The highest level directory in a hierarchical directory structure. In MS-DOS, the root directory on a drive is designated by a backslash (for example, the root on drive C is C:\). On UNIX, the root directory is designated by a slash (/).

Also, a UNIX user name having administration capability.

RS-232

An industry-standard interface for serial communications and sometimes used for communicating with storage peripherals.

RSM Interface

Application in Windows 2000 used to manage Removable Storage Manager (RSM) devices.

RSM - Removable Storage Manager

A Media Manager designation for a category of robot. For the specific vendor types and models in this category, see the VERITAS support web site.

Also, a component of the Windows 2000 operating system that manages storage devices.

RVSN

See “recorded media ID.”

schedules

Controls when backups can occur in addition to other aspects of the backup, such as: the type of backup (full, incremental) and how long NetBackup retains the image.

SCSI

Small computer system interface. This is a type of parallel interface that is frequently used for communicating with storage peripherals.

server-directed restore

Using the user interface on the master server to restore files to any client. Only the administrator can perform this operation.

server independent restore

Restoring files by using a NetBackup server other than the one that was used to write the backup. This feature is available only with NetBackup DataCenter.

server list

The list of servers that a NetBackup client or server refers to when establishing or verifying connections to NetBackup servers. On a Windows server and Microsoft Windows clients, you update the list through a dialog box in the interface. On a UNIX server and UNIX and Macintosh clients, the list is in the `bp.conf` file. On NetWare target and OS/2 clients, the list is in the `bp.ini` file.

service

A program on a Windows server system that runs in the background and performs some task (for example, starting other programs when they are needed). Services are generally referred to as daemons on UNIX systems.

session

An instance of NetBackup checking its schedules for backups that are due, adding them to its worklist, and attempting to complete all jobs in the worklist. For user backups and archives, a session usually consists of a single backup or archive.

Session (Vault)

A vault session consists of executing a particular profile or profiles.

shared drives

See “Shared Storage Option (SSO).”

Shared Storage Option (SSO)

A separately priced VERITAS software option that allows tape drives (standalone or in a robotic library) to be dynamically shared among multiple NetBackup and Storage Migrator servers.

This option is supported only on NetBackup DataCenter servers.

SMDR

Storage management data requestor, a Novell NetWare program that provides its services transparently to all SMS modules and lets remote and local modules communicate with one another.

SMS

Novell NetWare storage management services.

source volume group

A volume group from which Vault can select backups to duplicate. This parameter is used to restrict the list of backups from all backups that reside on media in any volume group to backups that reside on media in a single volume group. Where a volume group corresponds to a particular robot, the profile will duplicate only backups on media in that robot. The Source Volume Group is normally only specified if you have multiple robots attached to the same server, for example you want to duplicate backups that reside in robot 0 to media that reside in robot 1.

SSO

See “Shared Storage Option (SSO).”

stacker

Usually a small robotic library that contains one drive only. See “robotic library.”

standalone

A qualifier used with drives and media to indicate they are not associated with a robot. For example, a standalone tape drive is one where you must manually find and insert tapes before using them. A standalone volume is one that is located in a standalone drive or is stored outside of a drive and designated as standalone in the volume configuration.

status code

A numerical code, usually accompanied by a troubleshooting message, that indicates the outcome of an operation.

storage migrator

Refers to the VERITAS Storage Migrator line of hierarchical storage management products for UNIX and Windows. These products make extra room on a disk by transparently moving data to other storage and then transparently retrieving the data when it is needed by a user or application.

Storage Migrator is available only for NetBackup DataCenter servers.

storage unit

Refers to a storage device where NetBackup or Storage Migrator stores files. It can be a set of drives in a robot or consist of one or more single tape drives that connect to the same host.

SUSPENDED media state

If a volume is SUSPENDED, NetBackup can restore from it but cannot use it for backups. NetBackup retains a record of the media ID until the last backup image on the volume expires.

symbolic link

On a UNIX system, this is a pointer to the name of the file that has the source data.

TapeAlert

Allows reactive cleaning for most drive types and is a function of the tape drive.

tape format

The format that an application uses to write data on a tape.

tape marks

A mark that is recorded between backup images on a tape.

tape overhead

The space required for data that is not part of the backup images. For example, tape marks and catalogs of what are on the tape are considered overhead.

tape spanning

Using more than one tape to store a single backup image.

tar

Tape Archive program that NetBackup uses to extract backup images during a restore.

target

See “target service.”

target service

A Novell NetWare service that needs storage management. The SMS views all services (for example, print services, communication services, workstations) as targets.

Target Service Agent

A Target-service agent is a Novell NetWare agent that prepares the target's data for SMS during a backup and for the target during a restore.

TLD - Tape Library DLT

A Media Manager designation for a category of robot. For the specific vendor types and models in this category, see the VERITAS support web site.

TLH - Tape Library Half-inch

A Media Manager designation for a category of robot. For the specific vendor types and models in this category, see the VERITAS support web site.

This robot type is supported only by NetBackup DataCenter servers.

TLM - Tape Library Multimedia

A Media Manager designation for a category of robot. For the specific vendor types and models in this category, see the VERITAS support web site.

This robot type is supported only by NetBackup DataCenter servers.

TL4 - Tape Library 4MM

A Media Manager designation for a category of robot. For the specific vendor types and models in this category, see the VERITAS support web site.

TL8 - Tape Library 8MM

A Media Manager designation for a category of robot. For the specific vendor types and models in this category, see the VERITAS support web site.

timeout period

The period of time that an application has allotted for an event to occur.

TIR

See “true image restore.”

tpconfig

A Media Manager administration utility for configuring devices which is started from the command line. On UNIX, it has a character-based menu interface that can be run from terminals that do not have X Windows capabilities. tpconfig also has a command line interface.

transfer rate

The rate at which computer information is transferred between a source and a destination.

transport

See “robotic arm.”

true image restore

Restores the contents of a directory to what it was at the time of any scheduled full or incremental backup. Previously deleted files are ignored.

TS8 - Tape Stacker 8MM

A Media Manager designation for a category of robot. For the specific vendor types and models in this category, see the VERITAS support web site.

TSA

See “Target Service Agent.”

TSD - Tape Stacker DLT

A Media Manager designation for a category of robot. For the specific vendor types and models in this category, see the VERITAS support web site.

TSH - Tape Stacker Half-inch

A Media Manager designation for a category of robot. For the specific vendor types and models in this category, see the VERITAS support web site.

This robot type is supported only by NetBackup DataCenter servers.

unassigned media

Media that contain no valid images. A piece of unassigned media has an entry in the volumes database but no entries in the images database. Unassigned Media do not have a “time assigned” in the Media section of the GUI.

user interface

The program used to perform user backups, archives, and restores.

user operation

A backup, archive, or restore that is started by a person on a client system.

Vault

Vault is a separately-priced NetBackup option that provides offsite backup management. Vault automatically duplicates specified backup images, and automates the process of offsite media rotation (a critical component of any backup or disaster recovery strategy). Vault manages offsite storage and retrieval of media for original backups, duplicate backups, and catalog backups. Additionally, NetBackup Vault generates reports to track the location and content of each piece of media.

vault

In the context of the NetBackup Vault, a vault is logical entity associated with a particular robot that acts as a designated holding place for backups that will eventually be sent to a physical offsite vault. The term ‘vault’ is used to refer both to the process, and to the physical storage location of a set of tapes offsite.

vault process

Vaulting is the process of choosing backup images to duplicate or eject, optionally duplicating backups, ejecting duplicate or original media, storing it at an offsite location, and later returning expired media to your robot. Vaulting is an integral part of the disaster recovery process.

verbose flag

Configuration file entry that causes a higher level of detail to be written in the logs.

verify

An operation that compares the list of files that are actually on a volume with what NetBackup has recorded as being on it. The data that is on the media is not verified.

vmadm

A Media Manager administrator utility for managing volumes. It runs on UNIX and has a character-based, menu interface that can be run from terminals.

vm.conf

A Media Manager configuration file with entries that include the servers that can manage local devices and default media ID prefixes for media that do not contain barcodes.

volume

Media Manager volumes are logical units of data storage or cleaning capability on media that have been assigned media IDs and other attributes, which are recorded in the Media Manager volume database.

volume configuration

Refers to configuration information that is stored in the Media Manager volume database.

volume database

An internal database where Media Manager keeps information about volumes. All hosts (where Media Manager is installed) have a volume database. However, the database is empty unless the host is designated as a volume database host.

volume database host

The host (where Media Manager is installed) that contains information about the volumes that Media Manager uses in a device. Because NetBackup BusinesServer supports only a single server, the volume database host is always on the same server.

volume group

A set of volumes that are configured within Media Manager to reside at the same physical location (for example, in a specific robot).

volume pool

A set of volumes that are configured within Media Manager to be used by a single application and are protected from access by other applications and users.

wakeup interval

The time interval at which NetBackup checks for backups that are due.

wildcard characters

A character that can be used to represent other characters in searches.

Microsoft Windows

(noun) Describes a line of operating systems developed by Microsoft, Inc.

For more information on the Windows operating systems that NetBackup supports, refer to the VERITAS support web site at `http://www.support.veritas.com`.

Windows

(adjective) Used to describe a specific product or clarify a term. Some examples are: Windows 95, Windows 98, Windows NT, Windows 2000, Windows servers, Windows clients, Windows platforms, Windows hosts, and Windows GUI.

Windows servers

A term that defines the Windows server platforms that NetBackup supports; those platforms are: Windows NT and 2000.

Windows clients

A term that defines the Windows client platforms that NetBackup supports; those platforms are: Windows 95, 98, ME, NT, 2000, XP (for 32- and 64-bit versions), and LE.

Windows Display Console

A NetBackup-Java interface program that runs on Windows 2000, NT, 98, and 95 computers. Users can start this interface on their local system, connect to a UNIX system that has the NetBackup-Java software installed, and then perform any user operations that their permissions allow.

WORM media

Write-once, read-many media for optical disks. NetBackup BusinesServer does not support WORM media.

xbp

The X Windows-based backup, archive, and restore program for users on NetBackup UNIX clients.

Index